

**EPA Superfund  
Record of Decision:**

**INTERSTATE LEAD CO. (ILCO)  
EPA ID: ALD041906173  
OU 01  
LEEDS, AL  
09/30/1991**

THE ILCO PARKING LOT, AND FLEMING'S PATIO

- EXCAVATION AND SOLIDIFICATION/STABILIZATION OF SOIL WITH LEAD CONCENTRATIONS EXCEEDING 300 MG/KG;
- REPLACING THE TREATED SOIL BACK INTO THE EXCAVATED AREAS;
- REMOVAL OF BATTERY CASINGS AND OTHER DEBRIS;
- SOLIDIFICATION OF BATTERY CASING MATERIAL THAT CAN BE SUFFICIENTLY CRUSHED AND REPLACING THE SOLIDIFIED MATERIAL ONSITE. OFFSITE DISPOSAL OF OTHER DEBRIS;
- REVEGETATION OF EXCAVATED AREAS;
- INSTITUTIONAL CONTROLS, CONSISTING OF ACCESS AND DEED RESTRICTIONS, AND LONG-TERM GROUNDWATER MONITORING; AND
- SEMI-ANNUAL SAMPLING AND ANALYSIS OF EXISTING MONITOR WELLS FOR THE PRIMARY METALS ASSOCIATED WITH AUTOMOTIVE BATTERIES.

THE GULF SERVICE STATION. J&L FABRICATORS. THE CONNELL PROPERTY AND THE ACMAR CHURCH OF GOD

- EXCAVATION OF SOIL WITH LEAD CONCENTRATIONS EXCEEDING 300 MG/KG;
- TRANSPORTATION OF THE EXCAVATED SOIL TO THE PARKING LOT WHERE A CENTRALLY LOCATED TREATMENT UNIT WILL BE LOCATED;
- TREATMENT OF CONTAMINATED SOIL WITH A SUCCESSFULLY DEMONSTRATED SOLIDIFICATION AND STABILIZATION PROCESS;
- PLACEMENT OF THE SOLIDIFIED MATERIAL INTO THE ILCO PARKING LOT SUBSITE (IF TREATED WASTES ARE PLACED AT THE PARKING LOT, THEN THE SUBSITES FROM WHICH THE MATERIAL ORIGINATE WOULD NOT NEED 5 YEAR REVIEWS, SUBTITLE D CLOSURE, OR DEED RESTRICTIONS. INSTEAD, THESE SUBSITES CAN BE BACKFILLED WITH CLEAN FILL AND REVEGETATED.) OR REPLACEMENT OF THE SOLIDIFIED MATERIAL INTO ITS ORIGINAL EXCAVATION IF THERE ARE SPACE LIMITATIONS IN THE PARKING LOT;
- REMOVAL OF SEDIMENTS EXCEEDING 50 MG/KG LEAD, DEWATERING, AND TRANSPORT AND TREATMENT ALONG WITH THE SOIL FOR SEDIMENT AT THE GULF STATION; AND
- TEMPORARY RELOCATION AT THE CONNELL PROPERTY AND THE ACMAR CHURCH OF GOD IF NECESSARY.

THE LEEDS MUNICIPAL LANDFILL

- CONSTRUCTION OF A MULTILAYER COMPACTED CLAY AND GEOMEMBRANE CAP THAT WOULD COVER AREAS WITH SOIL EXCEEDING 300 MG/KG OF LEAD; AND
- INSTITUTIONAL CONTROLS CONSISTING OF ACCESS AND DEED RESTRICTIONS TO PROTECT THE INTEGRITY OF THE CAP SYSTEM, AND LONG-TERM GROUNDWATER MONITORING.

THE SELECTED ALTERNATIVES FOR GROUNDWATER CONTAMINATION ARE AS FOLLOWS:

GULF SERVICE STATION AND ACMAR CHURCH OF GOD

- NO GROUNDWATER REMEDIATION ACTIVITIES WILL BE CONDUCTED AT THESE SUBSITES SINCE NO CONTAMINATION WAS DETECTED; AND
- LONGTERM GROUNDWATER MONITORING WILL BE CONDUCTED.

J&L FABRICATORS. FLEMING'S PATIO, AND THE CONNELL PROPERTY

- NO GROUNDWATER REMEDIATION ACTIVITIES WILL BE CONDUCTED AT THESE SUBSITES. CONTAMINANTS WOULD NATURALLY ATTENUATE OR LESSEN WITH TIME; AND
- LONGTERM GROUNDWATER MONITORING WILL BE CONDUCTED.

CITY OF LEEDS LANDFILL

- EXTRACTION OF CONTAMINATED GROUNDWATER;
- TREATMENT ONSITE WITH A MOBILE CHEMICAL/PHYSICAL TREATMENT UNIT;
- DISCHARGE OF THE GROUNDWATER ONSITE INTO THE ADJACENT DRAINAGEWAY (SURFACE OUTFALL); AND
- GROUNDWATER MONITORING DURING AND AFTER EXTRACTION IS FINISHED.

STATUTORY DETERMINATION

THE SELECTED REMEDY IS PROTECTIVE OF HUMAN HEALTH AND THE ENVIRONMENT, COMPLIES WITH FEDERAL AND STATE REQUIREMENTS THAT ARE LEGALLY APPLICABLE OR RELEVANT AND APPROPRIATE TO THE REMEDIAL ACTION, AND IS COST-EFFECTIVE. THIS REMEDY UTILIZES PERMANENT SOLUTIONS AND ALTERNATIVE TREATMENT TECHNOLOGIES TO THE MAXIMUM EXTENT PRACTICABLE, AND SATISFIES THE STATUTORY PREFERENCE FOR REMEDIES THAT EMPLOY TREATMENT THAT REDUCES TOXICITY, MOBILITY, OR VOLUME AS A PRINCIPAL ELEMENT.

BECAUSE THIS REMEDY WILL RESULT IN HAZARDOUS SUBSTANCES REMAINING ONSITE, THE ENVIRONMENTAL PROTECTION AGENCY (EPA) WILL CONDUCT A REVIEW WITHIN FIVE YEARS AFTER COMMENCEMENT OF REMEDIAL ACTION TO ENSURE THAT THE REMEDY CONTINUES TO PROVIDE ADEQUATE PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT.

DATE: 09/30/91

GREER C. TIDWELL  
REGIONAL ADMINISTRATOR

**INTERSTATE LEAD COMPANY (ILCO)**  
**LEEDS, JEFFERSON COUNTY, ALABAMA**

**#SNLD**

**SITE NAME, LOCATION, AND DESCRIPTION**

INTERSTATE LEAD COMPANY (ILCO) WAS FORMED IN THE 1960'S IN RESPONSE TO GROWTH IN THE FIELD OF LEAD RECYCLING. THE FACILITY HAS BEEN OPERATING AS A LEAD SMELTER SINCE 1970. FROM 1973 TO 1983, ILCO DISPOSED OF FURNACE SLAG IN AND AROUND LEEDS, ALABAMA.

THE ILCO SITE IS LOCATED APPROXIMATELY FIFTEEN MILES EAST OF BIRMINGHAM, ALABAMA IN THE CITY OF LEEDS. THE SITE CONSISTS OF SEVEN "SUBSITES" DISTRIBUTED THROUGHOUT THE CITY (SEE FIGURE 1, SITE LOCATION MAP) AND INCLUDES THE ILCO MAIN FACILITY AND PARKING LOT, (THE PARKING LOT IS ACROSS THE STREET FROM THE MAIN FACILITY), THE GULF SERVICE STATION (CURRENTLY OPERATING AS BRITISH PETROLEUM), J&L FABRICATORS, INC., THE ACMAR CHURCH OF GOD, THE CONNELL RESIDENTIAL PROPERTY, THE CITY OF LEEDS MUNICIPAL LANDFILL AND FLEMING'S PATIO. ALL BUT TWO OF THE SUBSITES, THE CONNELL PROPERTY AND ACMAR CHURCH OF GOD, ARE WITHIN A 3-MILE RADIUS OF WELLS THAT SERVE AS WATER SUPPLY WELLS FOR THE LEEDS AREA. THE ILCO MAIN FACILITY AND PARKING LOT ARE LOCATED ON APPROXIMATELY 8.5 ACRES ON THE SOUTH SIDE OF BORDEN AVENUE NEARLY ONE MILE SOUTHEAST OF THE CENTER OF LEEDS.

THE SUBSITES ARE LOCATED IN A MIXED INDUSTRIAL AND RESIDENTIAL AREA IN AND NEAR THE CITY OF LEEDS IN JEFFERSON AND ST. CLAIR COUNTIES, ALABAMA. ACCORDING TO THE 1980 CENSUS, THE POPULATION OF JEFFERSON COUNTY IS 671,197 AND THE POPULATION OF ST. CLAIR COUNTY IS 41,115. THE LEEDS CHAMBER OF COMMERCE LISTS THE POPULATION OF LEEDS AT 8,638, AND THE 1980 CENSUS REPORTS A POPULATION OF 9,264.

THE ILCO PARKING LOT SITE IS IN A SECTION ZONED AS HEAVY INDUSTRIAL. WITHIN THREE MILES OF THE PROPERTY, LAND IS ZONED AS RESIDENTIAL, AGRICULTURAL, LIGHT INDUSTRIAL, AND BUSINESS.

THE GULF SERVICE STATION, NOW OPERATING AS BRITISH PETROLEUM, IS IN THE CENTER OF LEEDS AND IS SURROUNDED BY OTHER BUSINESSES. THE LITTLE CAHABA RIVER BORDERS THE NORTHWESTERN PROPERTY BOUNDARY. A RESIDENTIAL TRAILER PARK BORDERS THE LITTLE CAHABA RIVER TO THE NORTHWEST. THE LEEDS ELEMENTARY SCHOOL IS LOCATED SOUTHWEST OF THE GULF SERVICE STATION ACROSS US HIGHWAY 78.

J&L FABRICATORS IS ON US HIGHWAY 78, EAST OF THE CITY OF LEEDS. THE COMPANY IS IN A SMALL INDUSTRIAL AND BUSINESS COMPLEX BORDERED BY LOW-DENSITY RESIDENTIAL HOUSING TO THE EAST AND SOUTHEAST, AN ABANDONED SHALE PIT TO THE SOUTH, A HEAVY INDUSTRIAL COMPLEX TO THE SOUTHWEST, AND LIGHT INDUSTRY AND BUSINESSES TO THE NORTH. IMMEDIATELY TO THE WEST OF THE J&L FABRICATORS SITE ARE TWO HOMES, A BUILDING, AND A TRAILER. THE HOMES AND TRAILER ARE OCCUPIED.

FLEMING'S PATIO IS A RESTAURANT AND BAR WEST OF THE CITY OF LEEDS, ON ALASKA AVENUE OFF ERIE STREET. ON THE SOUTH SIDE OF THE RESTAURANT AND BAR IS A HOUSE TRAILER OCCUPIED BY THE PROPRIETOR AND HIS FAMILY. THE AREA IS A TRANSITION AREA FROM RURAL TO RESIDENTIAL PROPERTIES ON THE WESTERN PERIPHERY OF THE CITY OF LEEDS.

THE CONNELL PROPERTY IS APPROXIMATELY 1.4 ACRES IN SIZE AND CONTAINS TWO HOUSES AND ONE TRAILER HOME SERVED BY THE COUNTY'S WATER SYSTEM. THE HOUSE AND TRAILERS ARE OCCUPIED. LOW-DENSITY RESIDENTIAL PROPERTIES LIE TO THE NORTH AND EAST, WITH MIXED HARDWOOD-CONIFER FORESTS TO THE SOUTH AND WEST.

THE CITY OF LEEDS LANDFILL IS SOUTHWEST OF THE CITY, OFF DUNAVANT ROAD AT THE END OF PEACH STREET. A LIMITED NUMBER OF RESIDENTIAL PROPERTIES AND DWELLINGS LIE DIRECTLY NORTH OF THE LANDFILL PROPERTY. THE LANDFILL IS SURROUNDED ON THE EAST, SOUTH, AND WEST SIDES BY

HARDWOOD-CONIFER FORESTS.

THE ACMAR CHURCH OF GOD IS APPROXIMATELY 5.5 MILES NORTHEAST OF THE CITY OF LEEDS, OFF ACMAR ROAD, NEAR ACMAR, ALABAMA, IN A PREDOMINANTLY RURAL AREA. THE CHURCH PROPERTY IS BORDERED BY NATURAL VEGETATION AND TREES.

## **#SHEA**

### **SITE HISTORY AND ENFORCEMENT ACTIVITIES**

ILCO MANUFACTURES REFINED LEAD ALLOYS THROUGH THE SMELTING AND REFINING OF LEAD-BEARING SCRAP MATERIALS. THE PRIMARY MATERIALS RECLAIMED BY ILCO ARE DISCARDED LEAD-ACID AUTOMOBILE BATTERIES. AFTER BATTERIES ARE PROCESSED AND SEPARATED, LEAD PLATES AND LEAD OXIDE ARE SMELTED IN A BLAST FURNACE FOR SEPARATION, AND A SLAG IS PRODUCED WHICH IS CLASSIFIED UNDER THE RESOURCE CONSERVATION AND RECOVERY ACT (RCRA) AS A CHARACTERISTIC HAZARDOUS WASTE DUE TO ITS LEAD CONTENT. BATTERY CASINGS WERE DISPOSED AT THE ILCO FACILITY AND OTHER SUBSITES AND ARE ALSO CHARACTERISTIC HAZARDOUS WASTE DUE TO THEIR LEAD CONTENT. WASTEWATER TREATMENT SLUDGE WAS DISPOSED OF AT SOME OF THE SUBSITES. HOWEVER, THE FURNACE SLAG COMPRISES MOST OF THE WASTE THAT HAS BEEN DISPOSED OF AT THE MAIN FACILITY AND PARKING LOT AND AT THE SIX OTHER SUBSITES.

FROM APPROXIMATELY 1973 TO 1984, ILCO STORED FURNACE SLAG, BATTERY CHIPS, AND WASTEWATER TREATMENT SLUDGE IN PILES ON THE MAIN FACILITY PROPERTY. ILCO USED THE MATERIAL AS FILL ON ITS OWN PROPERTY AND SOME OF THE MATERIAL WAS HAULED OFF OF THE ILCO PROPERTY TO BE USED AS FILL AT OTHER LOCATIONS. LEAD WASTE WAS USED AS FILL MATERIAL AT THE ILCO PARKING LOT, THE GULF STATION, J & L FABRICATORS, THE CONNELL PROPERTY, FLEMING'S PATIO AND ACMAR CHURCH OF GOD. SOME WASTE WAS DISPOSED IN THE LEEDS LANDFILL.

ILCO FILED A CHAPTER 11 BANKRUPTCY PETITION ON AUGUST 20, 1982. A PLAN OF REORGANIZATION WAS ACCEPTED BY THE COURT AND ILCO IMPLEMENTED THE REORGANIZATION AND ON JUNE 11, 1987 A FINAL DECREE WAS ENTERED. ILCO FILED A SECOND CHAPTER 11 BANKRUPTCY PETITION ON JULY 22, 1991 WITH THE UNITED STATES BANKRUPTCY COURT FOR THE NORTHERN DISTRICT OF ALABAMA UNDER CASE NO. 91-05465. ILCO CONTINUES TO OPERATE ITS BUSINESS AS A DEBTOR IN POSSESSION UNDER THE JURISDICTION OF THE BANKRUPTCY COURT.

PAST STATE AND FEDERAL INVESTIGATIONS AT THE ILCO SITE INCLUDE STREAM/SEDIMENT SAMPLING CONDUCTED BY THE ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT (ADEM) IN JULY/AUGUST 1983 AND AN ECOLOGICAL/BIOLOGICAL ASSESSMENT CONDUCTED BY ADEM IN FEBRUARY/MARCH 1984. IN APRIL 1984, EPA CONDUCTED AN EMERGENCY REMOVAL ACTION AT THE ACMAR CHURCH OF GOD SITE, AND APPROXIMATELY 5,000 CUBIC YARDS OF WASTE MATERIAL AND SOIL WAS REMOVED FROM THE SITE DURING THE IMMEDIATE REMOVAL ACTION. THE WASTE MATERIAL AND SOIL WAS TRANSPORTED TO THE CHEMICAL WASTE MANAGEMENT DISPOSAL FACILITY IN EMELLE, ALABAMA. SUBSEQUENT INVESTIGATIONS INCLUDE A SITE SCREENING STUDY CONDUCTED BY EPA IN JULY 1984; A SAMPLING INVESTIGATION CONDUCTED BY EPA IN FEBRUARY 1985; AND A SAMPLING INVESTIGATION CONDUCTED BY EPA IN MAY 1985. BECAUSE THE DISPOSED WASTES POSE A POTENTIAL THREAT TO HUMAN HEALTH AND THE ENVIRONMENT, THE ILCO SITE WAS PLACED ON THE NATIONAL PRIORITIES LIST (NPL) OF UNCONTROLLED HAZARDOUS WASTE SITES IN JUNE 1986.

A TREATABILITY STUDY WAS CONDUCTED IN 1988 BY EPA ON LEAD-CONTAMINATED SOIL FROM THE SITE AND ANOTHER TREATABILITY STUDY WAS CONDUCTED IN 1990 ON THE WASTE AND CONTAMINATED SOILS IN THE ILCO PARKING LOT SITE.

INITIAL REMEDIAL INVESTIGATION STUDIES WERE CONDUCTED DURING 1989. ADDITIONAL RI STUDIES WERE CONDUCTED IN 1990 IN ORDER TO FURTHER CHARACTERIZE THE SITE AND THE RI/FS REPORTS FOR THIS INVESTIGATION WERE COMPLETE JULY 1991. INFORMATION FROM BOTH 1989 AND 1990 STUDIES HAVE BEEN USED.

IN MARCH 1985 THE EPA REGION IV OFFICE FILED A COMPLAINT AGAINST ILCO, INC. AND ITS PRINCIPAL OWNER, DIEGO MAFFEI, SEEKING INJUNCTIVE RELIEF, PENALTIES AND DAMAGES FOR VIOLATIONS OF THE CLEAN WATER ACT, RCRA, AND CERCLA. THE STATE OF ALABAMA INTERVENED IN THE LITIGATION ASSERTING VIOLATIONS OF ALABAMA'S WATER POLLUTION CONTROL ACT AND HAZARDOUS WASTE MANAGEMENT AND MINIMIZATION ACT. AS A PARTIAL SETTLEMENT, A PARTIAL CONSENT DECREE WAS ENTERED REQUIRING ILCO TO CONDUCT "NECESSARY REMEDIATION OF THE CONTAMINATION OF SEDIMENT" IN SURROUNDING WATERWAYS. THE OUTSTANDING ISSUES (NORTHERN DISTRICT OF ALABAMA, SOUTHERN DIVISION CASE NO. CV85-H-823-S) WERE TRIED BEFORE THE COURT IN 1988. ON DECEMBER 10, 1990, THE COURT ISSUED AN ORDER AND FINDINGS OF FACT AND CONCLUSIONS OF LAW. THE COURT FOUND WITH RESPECT TO THE GOVERNMENT'S CLAIMS UNDER THE CLEAN WATER ACT THAT THE DEFENDANTS VIOLATED THEIR NPDES PERMIT. WITH RESPECT TO THE GOVERNMENT'S CLAIMS UNDER RCRA, THE COURT FOUND THAT THE DEFENDANTS CONTINUOUSLY STORED, TREATED AND DISPOSED OF HAZARDOUS WASTE AT THE PLANT SITE WITHOUT A RCRA PERMIT AND IN VIOLATION OF RCRA FEDERAL AND STATE REGULATIONS. THE COURT FOUND THAT INJUNCTIVE RELIEF WAS APPROPRIATE AND THAT ILCO HAS SUBJECTED ITSELF TO CIVIL PENALTIES UNDER NPDES AND RCRA. WITH RESPECT TO THE GOVERNMENT'S CERCLA CLAIM, THE COURT HELD THAT THE DEFENDANTS WERE LIABLE FOR ALL COSTS INCURRED BY THE UNITED STATES IN CONNECTION WITH A REMOVAL ACTION TAKEN BY EPA AT THE CHURCH OF GOD SUBSITE.

THE COURT DIRECTED THE PARTIES TO TRY TO REACH AN AGREEMENT AS TO THE RELIEF WHICH SHOULD BE PROVIDED BASED UPON THE COURT'S DETERMINATIONS AS TO LIABILITY AND WITH REGARD TO THE IMPORTANCE OF THE SECONDARY LEAD SMELTER INDUSTRY TO THE ENVIRONMENT AND THE ECONOMY. THE PARTIES COULD NOT REACH AN AGREEMENT AND EACH HAS SUBMITTED A PROPOSED FINAL JUDGMENT WITH THE COURT.

#### **#HCP**

##### **HIGHLIGHTS OF COMMUNITY PARTICIPATION**

COMMUNITY INTERVIEWS WERE CONDUCTED IN 1986. A FACT SHEET WAS DISTRIBUTED FEBRUARY 1987 TO INFORM THE PUBLIC ABOUT EPA INVESTIGATIONS. EPA UPDATED THE COMMUNITY RELATIONS PLAN IN 1989 AND HELD COMMUNITY INTERVIEWS AGAIN IN JANUARY 1990.

THE PROPOSED PLAN FOR THE ILCO SITE WAS RELEASED TO THE PUBLIC ON JULY 25, 1991. THIS DOCUMENT WAS MADE AVAILABLE IN BOTH THE ADMINISTRATIVE RECORD AND AN INFORMATION REPOSITORY MAINTAINED AT THE EPA RECORDS CENTER IN REGION IV AND AT THE LEEDS PUBLIC LIBRARY. THE NOTICE OF AVAILABILITY WAS PUBLISHED IN THE BIRMINGHAM NEWS AND THE BIRMINGHAM POST-HERALD ON JULY 24, 1991 AND WAS PUBLISHED IN THE LEEDS NEWS JULY 25, 1991. A PUBLIC COMMENT PERIOD WAS HELD FROM JULY 25, 1991 THROUGH AUGUST 24, 1991. IN ADDITION TO PUBLIC COMMENT AND THE ACCESSIBILITY OF THE INFORMATION, A PUBLIC MEETING WAS HELD ON AUGUST 8, 1991. AT THIS MEETING, REPRESENTATIVES FROM ADEM AND EPA ANSWERED QUESTIONS AND ADDRESSED COMMUNITY CONCERNS. DUE TO A REQUEST FROM ILCO THE COMMENT PERIOD WAS EXTENDED TO SEPTEMBER 23, 1991. A RESPONSE TO COMMENTS RECEIVED DURING THIS PERIOD IS INCLUDED IN THE RESPONSIVENESS SUMMARY, APPENDIX A OF THIS RECORD OF DECISION. THIS DECISION DOCUMENT PRESENTS THE SELECTED REMEDIAL ACTION FOR THE ILCO SITE, IN LEEDS, ALABAMA, CHOSEN IN ACCORDANCE WITH THE COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION AND LIABILITY ACT OF 1980 (CERCLA), AS AMENDED BY THE SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986 (SARA) AND, TO THE EXTENT PRACTICABLE, THE NATIONAL CONTINGENCY PLAN. THE DECISION FOR THIS SITE IS BASED ON THE ADMINISTRATIVE RECORD.

THE ILCO COMMUNITY RELATIONS PLAN (CRP), AND PREVIOUS FACT SHEETS CAN ALSO BE FOUND IN THE REPOSITORY AND THE LEEDS PUBLIC LIBRARY.

#### **#SROU**

##### **SCOPE AND ROLE OF OPERABLE UNIT WITHIN SITE STRATEGY**

THE PROBLEMS AT THE ILCO SUPERFUND SITE ARE COMPLEX. AS A RESULT, EPA HAS DIVIDED THE WORK INTO TWO MANAGEABLE COMPONENTS CALLED "OPERABLE UNITS (OUS)". THE ACTION DISCUSSED IN THIS RECORD OF

DECISION (ROD) IS CONSIDERED THE FIRST OF TWO PLANNED OPERABLE UNITS FOR THE SITE. THE FIRST OPERABLE UNIT ADDRESSES CONTAMINATION AT THE AREAS WHERE SUPERFUND REMEDIAL ACTION WILL BE CONDUCTED. THIS INCLUDES THE FOLLOWING:

OPERABLE UNIT (OU) #1  
SUPERFUND ACTIVITIES

ILCO PARKING LOT (SUBSITE 1B) - SOURCE (SOIL, SLAG, BATTERY CASINGS)

GULF SERVICE STATION (SUBSITE 2) - SOURCE (SOIL, SEDIMENT), AND GROUNDWATER

J & L FABRICATORS (SUBSITE 3) - SOURCE (SOIL, SEDIMENT) AND GROUNDWATER

FLEMING'S PATIO (SUBSITE 4) - SOURCE (SOIL, SLAG, TREATMENT SLUDGE, BATTERY CASINGS) AND GROUNDWATER

THE CONNELL PROPERTY (SUBSITE 5) - SOURCE (SOIL, SLAG) AND GROUNDWATER

CITY OF LEEDS LANDFILL (SUBSITE 6) - SOURCE (SOIL, SLAG, TREATMENT SLUDGE, BATTERY CASINGS) AND GROUNDWATER

ACMAR CHURCH OF GOD (SUBSITE 7) - SOURCE (SOIL, SLAG, TREATMENT SLUDGE) AND GROUNDWATER

THE ILCO FACILITY IS AN OPERATING RCRA FACILITY AND THEY ARE CURRENTLY UNDER A 1988 EPA RCRA CONSENT ORDER TO CONDUCT CORRECTIVE ACTION AT THEIR FACILITY. THE SECOND OPERABLE UNIT WILL ADDRESS CONTAMINATION AT THE AREAS WHERE RCRA CORRECTIVE ACTION WILL BE CONDUCTED. THIS INCLUDES THE FOLLOWING:

OPERABLE UNIT (OU) #2  
RCRA ACTIVITIES

ILCO MAIN FACILITY (SUBSITE 1A) - SOURCE (ANY CONTAMINATION ON OR AROUND THE ILCO MAIN FACILITY) AND GROUNDWATER (INCLUDING GROUNDWATER CONTAMINATION FROM THE PARKING LOT).

THE UNNAMED TRIBUTARY CLEANUP - ANY CONTAMINATION ASSOCIATED WITH THE STREAM CONTAMINATION FROM THE MAIN FACILITY AND PARKING LOT.

A DOWNSTREAM STUDY OF DRY CREEK - AN INVESTIGATION INTO ANY CONTAMINATION FROM ILCO FOUND DOWNSTREAM OF THE FACILITY.

EPA HAS NOW SELECTED CLEANUP ALTERNATIVES FOR OU #1. THE AGENCY WILL MONITOR THE PROGRESS OF THE RCRA ACTIONS IN OU #2 AND REVIEW THOSE ACTIONS TO ENSURE THAT THEY MEET CERCLA REQUIREMENTS. MANY OF THE ACTIVITIES OUTLINED IN OU #2 ARE CURRENTLY IN PROGRESS OR WILL BE SOON. UPON COMPLETION OF THESE ACTIVITIES THE SUPERFUND PROGRAM WILL PRESENT TO THE PUBLIC AN APPROPRIATE PLAN OF NO ACTION OR WHATEVER FURTHER ACTION IS NECESSARY AND A RECORD OF DECISION (ROD) WILL BE WRITTEN TO ADDRESS OU #2.

CONTAMINATION AT VARIOUS SUBSITE LOCATIONS AFFECTS DIFFERENT ENVIRONMENTAL MEDIA. DUE TO THE COMPLEX NATURE OF THE ILCO SUPERFUND SITE, THE ALTERNATIVES THAT HAVE BEEN EVALUATED HAVE BEEN DIVIDED INTO TWO GROUPS. THE FIRST GROUP OF ALTERNATIVES ADDRESSES CLEANUP OF THE SOURCE OF CONTAMINATION. THE REMAINING GROUP OF ALTERNATIVES ADDRESS CLEANUP OF GROUNDWATER. A SOURCE IS AN AREA OR MATERIAL FOUND AT A HAZARDOUS WASTE SITE FROM WHICH CONTAMINATION ORIGINATES. GROUNDWATER IS THE WATER FOUND BENEATH THE EARTH'S SURFACE THAT FILLS PORES BETWEEN MATERIALS SUCH AS SAND, SOIL, GRAVEL, AND CRACKS IN BEDROCK AND SOMETIMES SERVES AS A SOURCE OF DRINKING

WATER.

REMOVAL OF THE SOURCE AT SOME OF THE SUBSITES WILL ELIMINATE THE PRINCIPLE THREAT AT THAT SUBSITE. TREATMENT OF THE GROUNDWATER OR NATURAL ATTENUATION OF THE GROUNDWATER CONTAMINANTS AND REMOVAL OF THE SOURCE AT THESE SUBSITES WILL RETURN THE GROUNDWATER TO ITS BENEFICIAL USES WITHIN A REASONABLE TIMEFRAME.

## **#SSC**

### **SUMMARY OF SITE CHARACTERIZATIONS**

#### REGIONAL GEOLOGY

THE ILCO SITE IS LOCATED IN THE APPALACHIAN VALLEY AND RIDGE PHYSIOGRAPHIC PROVINCE, WITHIN THE CAHABA VALLEY. THE NORTHEAST-SOUTHWEST TRENDING LAYERS OF ROCK IN THE ILCO AREA ARE STEEPLY INCLINED TO THE SOUTHEAST AT ANGLES UP TO 45 DEGREES AND ARE INTENSELY FRACTURED AND JOINTED (KIDD 1977). TABLE 1 DESCRIBES THE ROCK TYPES ENCOUNTERED AT EACH ILCO SUBSITE.

#### SUBSITE SPECIFIC GEOLOGY

THE PARKING LOT AREA, INCLUDING THE SLAG AND OTHER WASTES, IS UNDERLAIN BY ALLUVIUM, THE PRIDE MOUNTAIN FORMATION, THE HARTSELLE SANDSTONE, AND THE TUSCUMBIA LIMESTONE.

THE GULF SERVICE STATION SUBSITE IS UNDERLAIN BY 3 TO 10 FEET OF CHERT GRAVEL, SAND, AND SILT OF QUATERNARY AGE, WHICH DIRECTLY OVERLIES CRYSTALLINE LIMESTONE OF THE UNDIFFERENTIATED ORDOVICIAN-AGE.

THE J & L FABRICATOR SUBSITE AND THE CONNELL PROPERTY ARE UNDERLAIN BY A 0 TO 50 FOOT THICK VENEER OF GENERALLY UNCONSOLIDATED DEPOSITS OF QUATERNARY GRAVELS. THE GRAVELS OVERLIE THE FLOYD SHALE. AT J & L FABRICATORS THE SHALE AND INTERBEDS OF GRAY SHALEY SILTSTONE ARE HIGHLY JOINTED. THE GEOLOGIC UNIT UNDERLYING THE CITY OF LEEDS LANDFILL SUBSITE WAS NOT IDENTIFIED, BUT IT APPEARS TO ALSO BE THE FLOYD SHALE.

THE FLEMING'S PATIO SUBSITE IS UNDERLAIN BY KNOX GROUP UNDIFFERENTIATED CHERTY DOLOMITE, LIMESTONE, AND DOLOMITIC LIMESTONE. THE UNIT IS A LIGHT BROWN CLAY WITH IRREGULAR CHERT FRAGMENTS AND BOULDERS. THIS WEATHERED MATERIAL WAS PRESENT AT A DEPTH OF 104 FEET IN ONE WELL AT THE SITE.

THE ACMAR CHURCH OF GOD SITE IS UNDERLAIN BY BLACK ORGANIC SHALES AND COALS OF THE POTTSVILLE FORMATION. OUTCROPS OF COAL AND ASSOCIATED CARBONIFEROUS BLACK SHALES ARE JUST NORTHEAST OF THE CHURCH. AN UNDERCLAY, TYPICAL OF COAL DEPOSITS, UNDERLIES THE COAL-BEARING MATERIAL AND OUTCROPS TO THE NORTHWEST. A MASSIVE SANDSTONE OVERLIES THE COAL TO THE SOUTHEAST. ALL OF THESE LITHOLOGIC UNITS TREND NORTHEAST-SOUTHWEST AND ARE STEEPLY INCLINED TO THE SOUTHEAST AT AN ANGLE APPROACHING 45 DEGREES.

#### REGIONAL HYDROGEOLOGY

GENERALLY, FOUR WATER BEARING ZONES ARE PRESENT THROUGHOUT DIFFERENT AREAS OF LEEDS AREA. THEY INCLUDE THE FOLLOWING:

SURFICIAL AQUIFER--CONSISTS OF A THIN LAYER OF UNCONSOLIDATED ALLUVIAL DEPOSITS THAT COVERS MOST OF THE VALLEY. MAXIMUM THICKNESS IS 20 FEET. SEPARATED FROM THE SHALLOW AQUIFER SYSTEM BY A SILTY CLAY AT SOME LOCATIONS. VERY POOR SOURCE OF WATER TO WELLS. UNCONFINED WATER.

SHALLOW AQUIFER--CONSISTS OF WEATHERED TO CONSOLIDATED MATERIAL IN THE UPPER PART OF THE



BEDROCK. GENERALLY NO MORE THAN 30 FEET THICK.

SEPARATED FROM THE UNDERLYING ROCK IN SOME AREAS BY A DENSE, DARK-GRAY CLAY. VERY LIMITED SOURCE OF WATER TO WELLS. UNCONFINED WATER.

FORT PAYNE CHERT AQUIFER--PROVIDES SOME WATER SUPPLY TO THE CITY OF LEEDS. LEEDS CITY WELLS INSTALLED TO DEPTHS OF 150-300 FEET AND LOCATED APPROXIMATELY 1/2 MILE TO THE NORTHEAST OF THE MAIN FACILITY AND PARKING LOT SITE. THE FORMATIONS ABOVE IT ARE OF A LOWER PERMEABILITY THEREBY CREATING A CONFINED WATER SYSTEM.

ORDOVICIAN UNDIFFERENTIATED AQUIFER--CONSISTS OF 1,000 FEET OF CRYSTALLINE LIMESTONE. TWO SPRINGS IN THIS FORMATION PROVIDE WATER SUPPLY TO THE CITY OF LEEDS. THE WEEMS SPRING IS LOCATED OFF CEMETERY ROAD APPROXIMATELY 5 MILES SOUTHEAST OF THE ACMAR CHURCH IN MOODY, ALABAMA, NORTH OF LEEDS. THE ROWAN SPRING IS LOCATED IN LEEDS AT THE INTERSECTION OF HIGHWAY 119 AND PRESIDENT ROAD.

#### SUBSITE SPECIFIC HYDROGEOLOGY

THE GROUNDWATER MONITORING AT THE SUBSITES WAS CONDUCTED IN THE LOCAL SURFICIAL AQUIFERS FOUND IN THAT PARTICULAR AREA. THE ROCK FORMATIONS FOUND IN THESE SURFICIAL AQUIFERS VARY FROM SUBSITE TO SUBSITE. THE HYDROGEOLOGIC DISCUSSION AND THE GROUNDWATER REMEDIATION AT THE PARKING LOT WILL BE ADDRESSED IN OPERABLE UNIT #2.

#### THE GULF STATION

GROUNDWATER OCCURS IN WEATHERED SHALES AND ORDOVICIAN-AGE LIMESTONES AT 4.5 TO 14.5 FEET BELOW LAND SURFACE (BLS). GROUNDWATER IS UNCONFINED AND FLOW IS TO THE NORTHWEST, DISCHARGING FROM FRACTURES IN THE LIMESTONE INTO THE LITTLE CAHABA RIVER. GROUNDWATER FLOW IS SHALLOW AND TO THE NORTHWEST.

WATER YIELD FROM THESE ROCKS VARIES QUITE A LOT, RANGING FROM POOR TO GOOD, AS DETERMINED FROM SLUG TESTS. THE HYDRAULIC CONDUCTIVITY OF THE TWO WELLS TESTED WAS 0.92 FT/D ( $3.3 \times 10^{-4}$ ) CM/SEC) AND 35.2 FT/D ( $1.2 \times 10^{-2}$ ) CM/SEC). THE DIFFERENCE IN THE TWO HYDRAULIC CONDUCTIVITIES IS THOUGHT TO BE DUE TO FRACTURES ENCOUNTERED IN ONE OF THE WELLS. THIS WELL PRODUCES THE MOST WATER. AN AVERAGE HYDRAULIC CONDUCTIVITY OF 18 FT/D WAS USED. THE GROUNDWATER FLOW VELOCITY WAS ESTIMATED TO BE APPROXIMATELY 8 FT/D TO THE NORTHWEST.

#### J & L FABRICATORS

GROUNDWATER GENERALLY OCCURS UNDER UNCONFINED CONDITIONS FROM 4.5 TO 7.5 FEET BLS IN THE WEATHERED FLOYD SHALE. THE GROUNDWATER FLOW IS TO THE SOUTHWEST TOWARD DRY CREEK FROM ALLUVIUM AND THE FLOYD SHALE. THE AVERAGE HYDRAULIC CONDUCTIVITY OF THESE ROCKS, AS DETERMINED FROM A SLUG TEST, IS 0.94 FT/D ( $(3.3 \times 10^{-4})$  CM/SEC)), INDICATING A VERY POOR WATER-YIELDING UNIT. THE GROUNDWATER FLOW VELOCITY WAS ESTIMATED TO BE APPROXIMATELY 0.22 FT/D, WITH FLOW TO THE SOUTHWEST.

#### FLEMING'S PATIO

GROUNDWATER OCCURS IN DOLOMITES AND CHERTY CLAY UNDERLYING THE FILL MATERIAL. THE GROUNDWATER IS UNCONFINED. WATER LEVELS RANGE FROM ABOUT 1.5 TO 83.5 FEET BLS. FLOW HAS BEEN MODIFIED BY THE PRESENCE OF A RECHARGE MOUND IN THE LOW PERMEABILITY CLAYEY CHERT ZONES AND DOLOMITIC MATERIALS UNDERLYING THE FILL AT THE SITE. SURFACE STORMWATER FLOWING DOWN ALASKA AVENUE AND FROM ADJACENT UPLANDS PERCOLATES RAPIDLY INTO THE HIGHLY PERMEABLE FILL MATERIAL. THE WATER CONTAINED IN THE FILL MATERIAL THEN SLOWLY SEEPS DOWNWARD INTO THE UNDERLYING ROCK, FORMING A

WATER TABLE RECHARGE MOUND. THIS MOUND FLOWS FROM THE FILL AREA TOWARD THE NORTHEAST IN THE NORTHERN SECTION OF THE SUBSITE AND TO THE SOUTHWEST IN THE SOUTHERN SECTION OF THE SUBSITE.

THE AVERAGE HYDRAULIC CONDUCTIVITY OF THESE ROCKS, AS DETERMINED FROM SLUG TESTS, IS 2.45 FT/D ( $8.6 \times 10^4$  CM/SEC), INDICATING A POOR WATER-YIELDING UNIT. THE GROUNDWATER FLOW VELOCITY FROM THE FILL AREA, WHICH APPEARS TO BE UNDERLAIN BY A GROUNDWATER RECHARGE MOUND, WAS ESTIMATED TO BE APPROXIMATELY 6.53 FT/D TO THE NORTHEAST AND 10.9 FT/D TO THE SOUTHWEST DUE TO THE MOUNDING EFFECT.

#### THE CONNELL PROPERTY

GROUNDWATER IS UNCONFINED AND OCCURS IN THE SURFICIAL AQUIFER AND THE SHALLOW WEATHERED ZONE OF THE FRACTURED FLOYD SHALE. WATER LEVELS RANGE FROM 3 TO 12 FEET BLS. THE FLOW IS TOWARD THE NORTHWEST AT DEPTHS OF ABOUT 9 FEET BELOW LAND SURFACE INTO A MARSHY AREA. IN THE NORTHWEST CORNER OF THE PROPERTY, GROUNDWATER SEEMS TO COME TO LAND SURFACE DURING VERY RAINY YEARS. THIS PROVIDES FLOW AS SEEPAGE DURING THOSE YEARS.

THE AVERAGE HYDRAULIC CONDUCTIVITY OF THESE ROCKS, AS DETERMINED FROM SLUG TESTS, IS 0.93 FT/D ( $(3.3 \times 10^{-4})$  CM/SEC), INDICATING A VERY POOR WATER-YIELDING UNIT. THE GROUNDWATER FLOW VELOCITY ESTIMATED TO BE APPROXIMATELY 0.95 FT/D.

#### THE CITY OF LEEDS LANDFILL

GROUNDWATER OCCURS IN CLAY AND ALONG FRACTURES IN THE UNDERLYING STEEPLY INCLINED FLOYD SHALE. WATER LEVELS RANGE FROM APPROXIMATELY 6.5 TO 25 FEET BLS. ACCORDING TO THE WATER ELEVATIONS AT THREE ONSITE MONITOR WELLS, GROUNDWATER APPEARS TO FLOW TO THE WEST-NORTHWEST.

GROUNDWATER FLOW IS TO THE WEST-NORTHWEST, GENERALLY CONFORMING TO THE CONTOURS OF THE LAND. THE AVERAGE HYDRAULIC CONDUCTIVITY OF THESE ROCKS, AS DETERMINED FROM SLUG TESTS, IS 2.6 FT/D ( $(9 \times 10^{-4})$  CM/SEC), INDICATING A POOR WATER-YIELDING UNIT. THE GROUNDWATER FLOW VELOCITY WAS ESTIMATED TO BE APPROXIMATELY 2.95 FT/D, TO THE WEST-NORTHWEST.

#### THE ACMAR CHURCH OF GOD

GROUNDWATER FLOW IS THROUGH PENNSYLVANIAN-AGE POTTSVILLE FORMATION SHALES AND POORLY SORTED, SILTY SANDSTONE, WITH SOME ASSOCIATED COAL BEDS. WATER LEVELS IN THE TWO ONSITE WELLS RANGE FROM 37 TO 45 FEET BLS. NO GROUNDWATER WAS ENCOUNTERED IN THE UPPER SILTY SAND AND SHALE. IT IS NOT POSSIBLE TO DETERMINE THE DIRECTION OF GROUNDWATER FLOW BASED ON THE WATER LEVELS IN THE TWO ONSITE WELLS ALONE; HOWEVER, IT IS EXPECTED THAT GROUNDWATER FLOW FOLLOWS THE TOPOGRAPHIC SLOPE DOWNWARD TO THE NORTHWEST AND SOUTHEAST. THE WEEMS SPRINGS IS LOCATED APPROXIMATELY 5 MILES SOUTHEAST OF THE SITE. NO OTHER SPRINGS HAVE BEEN OBSERVED IN THE VICINITY OF THE SITE.

THE DEPTH TO GROUNDWATER EXCEEDS 40 FEET AT THE SITE. THE AVERAGE HYDRAULIC CONDUCTIVITY OF THESE ROCKS, AS DETERMINED FROM SLUG TESTS, IS 8.5 FT/D ( $(3 \times 10^{-3})$  CM/SEC), INDICATING A LOW TO MODERATE WATER-YIELDING UNIT. THE AVAILABILITY OF ONLY TWO WELLS AT THE SUBSITE ALLOWED THE ESTIMATION OF AN APPROXIMATED GROUNDWATER FLOW VELOCITY OF 3.4 FT/D IN A SOUTHWESTERLY DIRECTION; IT IS LIKELY TO BE AS MUCH AS 25 TO 50 PERCENT GREATER ON THE STEEP SLOPES OF THE RAVINE ABOVE WHICH THE SITE IS LOCATED.

#### SURFACE WATER

THREE SIGNIFICANT SURFACE WATER BODIES IN THE LEEDS AREA ARE THE CAHABA RIVER TO THE NORTH OF THE CITY OF LEEDS; THE LITTLE CAHABA RIVER, WHICH RUNS THROUGH LEEDS JUST NORTH AND WEST OF THE GULF SERVICE STATION; AND DRY CREEK, A STREAM THAT RUNS NEAR THE MAIN FACILITY AND PARKING LOT

AND J&L FABRICATORS AND FLOWS INTO THE LITTLE CAHABA RIVER IN THE VICINITY OF THE WASTEWATER TREATMENT PLANT. THE ACMAR CHURCH OF GOD IS LOCATED AT THE CONFLUENCE OF BIG BLACK CREEK AND LITTLE BLACK CREEK, WHICH FLOWS INTO THE CAHABA RIVER NORTH OF THE CITY OF LEEDS.

#### ECOLOGY

NO ENDANGERED OR THREATENED SPECIES WERE OBSERVED DURING THE RI. ALTHOUGH NONE WERE FOUND THERE IS A REMOTE POSSIBILITY THAT SOME OF THE ENDANGERED OR THREATENED ANIMALS MAY POTENTIALLY OCCUR WITHIN THE GENERAL GEOGRAPHIC AREA. POSSIBLE AQUATIC SPECIES THAT MAY BE PRESENT INCLUDE THE CAHABA SHINER, GOLDLINE SHINER AND THE BLUE SHINER. OTHER ANIMALS THAT MAY BE PRESENT IN SURFACE WATER HABITATS INCLUDE THE SOUTHERN HOGNOSE SNAKE, EASTERN TIGER SALAMANDER, GREEN SALAMANDER, COAL SKUNK, NORTHERN PINE SNAKE, AND THE RED-COCKADED WOODPECKER.

#### SAMPLING RESULTS

THE PRIMARY EMPHASIS FOR ANALYTICAL TESTING DURING THE RI WAS PLACED ON DETERMINING THE IMPACT THAT THE LEAD WASTE MAY HAVE HAD ON THE ENVIRONMENT AT EACH OF THE SEVEN SUBSITES, INCLUDING THE EFFECT ON SOIL, SURFACE WATER, SEDIMENT, AIR, AND GROUNDWATER. SPECIFICALLY, THE ANALYTICAL TESTING PROGRAM WAS DEVELOPED TO DETECT THE PRESENCE OF LEAD.

IN ADDITION TO LEAD, OTHER INORGANIC COMPOUNDS WERE IDENTIFIED DURING THE RI. HOWEVER, DUE TO LEAD'S WIDE SPREAD DISTRIBUTION, CONCENTRATION, AND TOXICITY, LEAD WAS SELECTED AS THE PRIMARY CONTAMINANT OF CONCERN AT EACH SUBSITE. THE COMPLETE ANALYTICAL DATA USED FOR THE REMEDIAL INVESTIGATION IS AVAILABLE IN THE RI REPORT. A SUMMARY OF CONTAMINANTS OF POTENTIAL CONCERN FOUND AT ALL OF THE SUBSITES IS SHOWN IN TABLE 2.

BACKGROUND SURFACE SOIL SAMPLES WERE COLLECTED IN AN AREA LOCATED APPROXIMATELY 1,800 FEET SOUTHEAST OF THE ILCO FACILITY.

#### PARKING LOT

GROUNDWATER - THE RI INVESTIGATED GROUNDWATER AT THE MAIN FACILITY AND PARKING LOT. HOWEVER, THIS GROUNDWATER CONTAMINATION IS INCLUDED IN OPERABLE UNIT #2 AND IS BEING ADDRESSED UNDER RCRA. IT WILL BE ADDRESSED IN A FUTURE ROD.

SOIL - LEAD CONCENTRATIONS EXCEEDING 1,000 MG/KG WERE DETECTED IN NEARLY ALL THE SURFACE SOIL SAMPLES COLLECTED AROUND THE OUTER BORDERS OF THE PARKING LOT. SUBSURFACE SAMPLES TAKEN FROM THE NORTHWEST AND SOUTHEAST CORNERS OF THE PARKING LOT EXCEEDED 1,000 MG/KG. THE CENTER OF THE PARKING LOT HAD LEAD CONTAMINATION AT GREATER DEPTHS THAN THE OUTER BORDERS. THE EXTENT OF LEAD CONCENTRATIONS IN SOIL GREATER THAN 300 MG/KG AT THE PARKING LOT IS SHOWN IN FIGURE 2. X-RAY FLUORESCENCE (XRF) DATA RANGED FROM 10 TO 82,874 MG/KG LEAD IN SOIL. ANALYTICAL RESULTS SHOWED CONCENTRATIONS RANGING FROM 6.6 TO 100 MG/KG FOR NICKEL, 8.6 TO 29 MG/KG FOR CHROMIUM, 1.2 TO 50 MG/KG FOR CADMIUM, 2.7NJ TO 160 MG/KG FOR ARSENIC, 10J TO 170J MG/KG FOR ANTIMONY, AND 4.9J TO 89J FOR COPPER.

SEDIMENT AND SURFACE WATER CONTAMINATION WILL BE ADDRESSED IN A LATER RECORD OF DECISION (ROD).

#### GULF STATION

GROUNDWATER - LEAD WAS DETECTED IN THE TURBID UNFILTERED SAMPLES AT THE GULF STATION AT A CONCENTRATION OF 7 UG/L. IT WAS FOUND IN THE WELL CLOSEST TO THE FILL AREA. NONE OF THE OTHER PARAMETERS WERE DETECTED IN THE MONITOR WELLS. THE UPGRADIENT WELL, GG-2, CONTAINED SUFFICIENT WATER FOR WATER LEVEL MEASUREMENT PURPOSES, BUT THERE WAS NOT ENOUGH WATER PRESENT FOR SAMPLING AND ANALYSIS. FIGURE 3 SHOWS THE RESULTS FOR UNFILTERED LEAD SPECIFIC CONDUCTIVITY AND PH FOR

EACH MONITORING WELL. INSUFFICIENT DATA POINTS WERE AVAILABLE FOR PREPARING A MAP SHOWING, AS CONTOURS, THE APPROXIMATE DISTRIBUTION OF LEAD IN GROUNDWATER WHEN UNFILTERED SAMPLES WERE COLLECTED.

SOIL - LEAD CONCENTRATIONS EXCEEDING 300 MG/KG WERE DETECTED IN SURFACE SOIL SAMPLES COLLECTED ALONG THE SOUTHWEST EDGE OF THE SITE (ADJACENT TO HIGHWAY 78) AND COLLECTED NORTH OF THE GULF STATION. THE EXTENT OF LEAD CONTAMINATION IN THE SOIL AT THE GULF SERVICE STATION IS SHOWN IN FIGURE 3. THE LEAD CONCENTRATIONS GREATER THAN 300 MG/KG ARE CONTAINED WITHIN THE UPPER 6 FEET OF THE SOIL. ONLY ONE SAMPLE (LOCATED IN THE DEPRESSION ON THE SOUTHERN EDGE OF THE SITE) WAS ANALYZED FOR THE OTHER PARAMETERS, AND THE RESULTS WERE 12 MG/KG, 24 MG/KG, 3.5 MG/KG, AND 66 MG/KG FOR NICKEL, CHROMIUM, CADMIUM, AND COPPER, RESPECTIVELY. SAMPLES COLLECTED FROM GROUNDWATER WELL BORINGS DETECTED CHROMIUM AT 13-36JN MG/KG AND NICKEL AT 5.4-28 MG/KG. XRF DATA FOR SOILS DETECTED LEAD AT CONCENTRATIONS RANGING FROM 8 TO 2,490 MG/KG.

LEAD WAS NOT DETECTED ABOVE 300 MG/KG IN THE FIVE SURFACE SOIL SAMPLES COLLECTED AT THE LEEDS ELEMENTARY SCHOOL.

SURFACE WATER - ARSENIC WAS THE ONLY METAL DETECTED IN SURFACE WATER SAMPLES COLLECTED AT THE GULF SERVICE STATION. IT WAS DETECTED AT 12 UG/L AT LOCATION SG-4. THIS IS BELOW THE AWQC FOR ARSENIC. FISH TISSUE SAMPLES DETECTED LEAD, CHROMIUM, COPPER AND NICKEL.

SEDIMENT - ANALYTICAL RESULTS FOR SEDIMENT SAMPLES WERE ALL REPORTED AS ESTIMATED CONCENTRATIONS. CONCENTRATIONS RANGED FROM 23J TO 660J MG/KG FOR LEAD, 7.06 TO 25 MG/KG FOR NICKEL, 24J TO 47J MG/KG FOR CHROMIUM, AND 5.7J TO 10J MG/KG FOR ARSENIC. THE HIGHEST LEAD CONCENTRATION DETECTED WAS LOCATED SOUTHWEST OF HIGHWAY 78. THE SAMPLING LOCATIONS AND CONCENTRATIONS ARE SHOWN IN FIGURE 4.

AIR - LEAD AND ANTIMONY WERE DETECTED IN AIR SAMPLES.

#### J&L FABRICATORS

GROUNDWATER - IN SAMPLES COLLECTED FROM THE MONITOR WELLS AT THE J & L FABRICATORS SITE, LEAD WAS DETECTED IN ONE SAMPLE AT 96J UG/L, NICKEL WAS DETECTED AT 13 AND 64 UG/L, AND THE OTHER PARAMETERS WERE UNDETECTED. UNFILTERED GROUNDWATER SAMPLES FROM MONITOR WELLS GJ-2, GJ-4, AND GJD-1 WERE TURBID. FIGURE 5 SHOWS THE RESULTS FOR UNFILTERED LEAD, SPECIFIC CONDUCTIVITY, AND PH FOR EACH MONITOR WELL.

SOIL - LEAD CONCENTRATIONS AT THE J & L FABRICATORS SUBSITE RANGED FROM 9.3 TO 130,000A MG/KG. THE A REPRESENTS AN AVERAGE VALUE BASED ON TWO OR MORE SAMPLE CONCENTRATIONS. LEAD CONCENTRATIONS IN THE SURFACE SOIL RANGED FROM 149 MG/KG ON THE SOUTH SIDE OF THE SITE TO 61,798 MG/KG IN THE CENTRAL PART OF THE SITE. LEAD CONCENTRATIONS EXCEEDED 300 MG/KG IN MOST OF THE SURFACE SAMPLES EXCEPT IN SAMPLES COLLECTED FROM THE SOUTHEASTERN AND SOUTHWESTERN CORNERS OF THE SITE. MOST OF THE SUBSURFACE SAMPLES THAT EXCEEDED 300 MG/KG WERE LOCATED JUST NORTHWEST AND SOUTHEAST OF THE METAL FABRICATING BUILDING. A 1985 EPA SOIL SAMPLING EVENT DETECTED A LEVEL OF 130,000A MG/KG FOR LEAD, 140 MG/KG FOR CHROMIUM, AND 220 MG/KG FOR NICKEL. XRF DATA DETECTED LEAD IN SOIL AT LEVELS RANGING FROM 7 TO 84,355 MG/KG. ANALYTICAL RESULTS DETECTED CONCENTRATIONS IN SUBSURFACE SOIL RANGING FROM 6.1 TO 23 MG/KG FOR NICKEL, 9 TO 54 MG/KG FOR CHROMIUM, 0.6 TO 2 MG/KG FOR CADMIUM AND 2.7 TO 11 MG/KG FOR ARSENIC. THE EXTENT OF LEAD CONTAMINATION IN THE SOIL AT J & L FABRICATORS IS SHOWN ON FIGURE 5.

SURFACE WATER - LEAD WAS THE ONLY CONSTITUENT DETECTED IN SURFACE WATER. LEAD CONCENTRATIONS RANGED FROM 5J TO 7J UG/L. THE 7J UG/L RESULT IS ABOVE THE AWQC FOR LEAD IN SURFACE WATER. FIGURE 6 SHOWS THE SAMPLES LOCATIONS AND CONCENTRATIONS. FISH TISSUE SAMPLES DETECTED LEAD, CHROMIUM, COPPER AND NICKEL.

SEDIMENT - CONCENTRATIONS RANGED FROM 16J TO 39J MG/KG FOR LEAD. OTHER METALS WERE DETECTED BELOW THE NOAA'S EFFECTS RANGE FOR THOSE CONTAMINANTS IN SEDIMENT.

AIR - AIR SAMPLES DETECTED ALL OF THE CONTAMINANTS OF CONCERN EXCEPT FOR COPPER AND NICKEL.

#### FLEMING'S PATIO

GROUNDWATER - GROUNDWATER CONCENTRATIONS DETECTED IN THE TURBID SAMPLES FROM FLEMING'S PATIO RANGED FROM 6 TO 180J UG/L FOR LEAD. THE HIGHEST CONCENTRATION LEVELS FOR NICKEL, CHROMIUM, AND COPPER WERE DETECTED IN MONITOR WELL GF-2A. THE HIGHEST REPORTED CONCENTRATION OF LEAD (180J) WAS FOUND IN MONITOR WELL GF-6. MONITOR WELL GF-6 IS CENTRALLY LOCATED BENEATH THE FILL AREA IN UNDISTURBED ROCK. NONE OF THE PARAMETERS WERE DETECTED IN MONITOR WELL GF-3, WHICH APPEARS TO BE THE UPGRADIENT MONITOR WELL. CADMIUM, ARSENIC, AND ANTIMONY WERE NOT DETECTED IN ANY OF THE MONITOR WELLS. FIGURE 7 SHOWS THE UNFILTERED LEAD, SPECIFIC CONDUCTIVITY, AND PH RESULTS FOR EACH MONITOR WELLS. THIS FIGURE ALSO SHOWS THE APPROXIMATE DISTRIBUTION OF LEAD IN GROUNDWATER BASED ON THE ANALYSIS OF UNFILTERED SAMPLES.

TWO MODEL RUNS WERE CONDUCTED TO DETERMINE WHAT MIGHT BE EXPECTED TO HAPPEN IF THE EXCESSIVE LEAD CONCENTRATION REPORTED IN MONITOR WELL GF-6 IS VALID AND THE FLOW IS FROM MONITOR WELL GF-6 TOWARD THE GROUNDWATER OF MONITOR WELL GF-7. AN ASSUMPTION FOR ONE MODEL RUN WAS THAT THE CARBONATE CONCENTRATION REPORTED REPRESENTS CARBONATE ALKALINITY. IN A SECOND RUN, THE ASSUMPTION WAS THAT THERE WAS AN INFINITE SOURCE OF DOLOMITE IN THE AREA OF MONITOR WELL GF-7 FOR REACTIONS TO TAKE PLACE WITH THE METALS-BEARING GROUNDWATER MOVING FROM THE AREA OF MONITOR WELL GF-6. THE MODELING RESULTS INDICATED THAT THE LEAD CONTENT OF THE GROUNDWATER WOULD BE REDUCED TO ABOUT 0.0883 AND 0.0971 MG/L, RESPECTIVELY, BY THE TIME THAT IT REACHED MONITOR WELL GF-7.

SOIL - LEAD CONCENTRATIONS DETECTED IN THE SURFACE SOIL AT THE FLEMING'S PATIO SITE EXCEEDED 300 MG/KG AT SAMPLING LOCATIONS WEST OF ALASKA AVENUE AND ERIE STREET, NORTHWEST OF THE FLEMING'S PATIO BUILDING, AND SOUTH OF THE FLEMING'S PATIO BUILDING.

IN SAMPLING EVENTS CONDUCTED PRIOR TO 1990 THE HIGHEST SURFACE SOIL CONCENTRATION (XRF DATA - 30,742 MG/KG) WAS DETECTED IN A SAMPLE FROM THE PARKING AREA WEST OF ALASKA AVENUE AND ERIE STREET. THE HIGHEST SUBSURFACE SOIL CONCENTRATION (XRF DATA - 50,103 MG/KG) WAS DETECTED IN A SAMPLE LOCATED NORTH OF THE FLEMING'S PATIO BUILDING. CONCENTRATIONS IN THE SUBSURFACE SOIL RANGED FROM 6.6 TO 23 MG/KG FOR NICKEL, AND 4.9 TO 18 MG/KG FOR CHROMIUM. ARSENIC WAS DETECTED AT 2.2 MG/KG. A 1984 SAMPLING DETECTED CHROMIUM AT A LEVEL OF 32 MG/KG.

DURING THE 1990 REMEDIAL INVESTIGATION, ADDITIONAL SURFACE AND SUBSURFACE SOIL SAMPLES WERE COLLECTED AT SIX LOCATIONS TO DEPTHS UP TO 25 FEET. THE LATEST SOIL SAMPLING RESULTS SHOW THAT LEAD CONCENTRATIONS IN THE SOIL SAMPLES COLLECTED FROM THE SURFACE RANGED FROM 5.5J TO 440J MG/KG IN LOCATION FSS2. IN THE 0 TO 5 FOOT DEPTH RANGE, LEAD WAS DETECTED IN CONCENTRATIONS FROM 4.1J TO 65,000J MG/KG. HIGHER CONCENTRATIONS OF LEAD WERE FOUND WITH DEPTH AT LOCATION FSS1 (100,000 J) AND FSS4 (110,000 J). THE LEAD CONCENTRATION IN THE ONLY SAMPLE COLLECTED IN THE 20 TO 25 FOOT DEPTH RANGE WAS 18,000J MG/KG. THE EXTENT OF LEAD CONTAMINATION IN THE SOIL AT FLEMING'S PATIO IS SHOWN IN FIGURE 7.

NICKEL CONCENTRATIONS WERE ALL LESS THAN 40J MG/KG EXCEPT THE CONCENTRATIONS DETECTED AT LOCATION FSS1 WHERE THE RESULTS WERE 71J MG/KG - 200J DEPENDING ON DEPTH. CHROMIUM CONCENTRATIONS WERE ALSO LESS THAN 40J MG/KG AND CADMIUM CONCENTRATIONS WERE ALL LESS THAN 50 J MG/KG EXCEPT FOR ONE CONCENTRATION OF 71J MG/KG DETECTED AT LOCATION FSS1. ARSENIC CONCENTRATIONS WERE ALL LESS THAN 100J MG/KG EXCEPT FOR ONE CONCENTRATION OF 200 MG/KG DETECTED AT LOCATION FSS4. AT LOCATION FSS1, THE VERTICAL DISTRIBUTION OF ARSENIC CONCENTRATIONS RANGED FROM 7.4J MG/KG TO 1,500J MG/KG. COPPER WAS FOUND AT 2800J MG/KG.

SEDIMENT - NO SURFACE WATER WAS FOUND AT THE SITE ALTHOUGH SEDIMENTS FROM A DITCH WERE SAMPLED AND DETECTED LEAD, CHROMIUM, AND NICKEL.

AIR - THE ONLY CONSTITUENT DETECTED IN THE AIR SAMPLES WAS LEAD.

#### CONNELL PROPERTY

GROUNDWATER - CONCENTRATIONS IN THE UNFILTERED GROUNDWATER SAMPLES RANGED FROM 5 TO 18 UG/L FOR LEAD, 47 TO 52 UG/L FOR NICKEL, AND 19 TO 46 UG/L FOR COPPER. LEAD WAS DETECTED AT 18 AND 12 UG/L IN THE TURBID SAMPLES FROM MONITOR WELLS GC-3 AND GCS-2, RESPECTIVELY. COPPER WAS DETECTED AT 19 AND 46 UG/L IN THE TWO UPGRADIENT MONITOR WELLS, GCS-1 AND GCS-2. THE OTHER PARAMETERS WERE NOT DETECTED IN ANY OF THE MONITOR WELLS. FIGURE 8 SHOWS THE UNFILTERED LEAD, SPECIFIC CONDUCTIVITY, AND PH RESULTS FOR EACH MONITOR WELL. THIS FIGURE ALSO SHOWS, AS CONTOURS, THE APPROXIMATE DISTRIBUTION OF LEAD IN GROUNDWATER WHEN UNFILTERED SAMPLES WERE COLLECTED.

SOIL - BASED ON ANALYTICAL RESULTS, LEAD CONCENTRATIONS IN THE SOIL AT THE CONNELL PROPERTY RANGED FROM 21 MG/KG ON THE WESTERN SIDE OF THE PROPERTY TO 3,600 MG/KG ON THE SOUTHWEST OF THE HOUSE. LEAD CONCENTRATION EXCEEDING 300 MG/KG WERE PRIMARILY DETECTED IN SURFACE SOIL SAMPLES COLLECTED JUST SOUTH OF THE CONNELL RESIDENCE AND ALONG THE WESTERN EDGE OF THE SITE. THE ONLY SUBSURFACE SOIL SAMPLES WITH LEAD CONCENTRATIONS EXCEEDING 300 MG/KG WERE LOCATED IN THE SOUTHWEST CORNER OF THE CONNELL PROPERTY SITE. XRF DATA RANGED FROM 42 TO 44,473 MG/KG LEAD IN SOIL. A 1985 EPA SAMPLING EVENT DETECTED LEAD IN SOILS AT 84,000 MG/KG. THIS EVENT ALSO FOUND 200 MG/KG FOR CHROMIUM AND 280 MG/KG FOR NICKEL. ANALYTICAL RESULTS INDICATED CONCENTRATIONS IN THE SUBSURFACE SOIL RANGING FROM 4.3 TO 83 MG/KG FOR NICKEL, 9.8 TO 26 MG/KG FOR CHROMIUM, 7.2 MG/KG FOR CADMIUM, AND 6.8JN TO 51 JN FOR ARSENIC. THE EXTENT OF LEAD CONTAMINATION IN THE SOIL AT THE CONNELL PROPERTY IS SHOWN IN FIGURE 8.

SEDIMENTS - NO SURFACE WATER WAS FOUND AT THIS SUBSITE. SEDIMENTS CONTAINED LEAD, CHROMIUM AND NICKEL.

#### AIR - AIR SAMPLES DETECTED LEAD AND ANTIMONY. CITY OF LEEDS LANDFILL

GROUNDWATER - GROUNDWATER CONCENTRATIONS DETECTED IN THE TURBID UNFILTERED SAMPLES AT THE CITY OF LEEDS LANDFILL RANGED FROM 24 TO 44 UG/L FOR LEAD, AND 44 TO 130 UG/L FOR NICKEL. ARSENIC WAS DETECTED AT A CONCENTRATION OF 12J. CHROMIUM WAS DETECTED AT A CONCENTRATION OF 96 UG/L AND COPPER AT A CONCENTRATION OF 53 UG/L. THE HIGHEST CONCENTRATION LEVELS FOR LEAD, NICKEL, CHROMIUM, AND COPPER WERE DETECTED IN MONITOR WELL GL-3. NONE OF THE PARAMETERS WERE DETECTED IN MONITOR WELL GS-1, WHICH IS THE UPGRADIENT MONITOR WELL. CADMIUM AND ANTIMONY WERE NOT DETECTED IN ANY OF THE MONITOR WELLS. FIGURE 9 SHOWS THE UNFILTERED LEAD, SPECIFIC CONDUCTIVITY, AND PH RESULTS FOR EACH OF THE MONITOR WELLS. INSUFFICIENT DATA POINTS WERE AVAILABLE FOR PREPARING A MAP SHOWING, AS CONTOURS, THE APPROXIMATE DISTRIBUTION OF LEAD IN GROUNDWATER.

SOIL - THE LEAD CONCENTRATIONS IN THE CITY OF LEEDS LANDFILL WERE GENERALLY LESS THAN 500 MG/KG. ONLY THREE SURFACE SOIL SAMPLES COLLECTED HAD LEAD CONCENTRATIONS THAT EXCEEDED 300 MG/KG. THE SURFACE SOIL SAMPLE COLLECTED NEAR THE WESTERN EDGE OF THE SITE CONTAINED THE HIGHEST REPORTED CONCENTRATION (XRF DATA - 716 MG/KG). CONCENTRATIONS RANGED FROM 4.8 TO 14 MG/KG FOR NICKEL AND 4.5 TO 18 MG/KG FOR CHROMIUM. CADMIUM WAS NOT DETECTED. ARSENIC WAS FOUND AT LEVELS FROM 2.1JN TO 4.4JN MG/KG, AND COPPER FROM 4.1J TO 21J AND ANTIMONY FROM 7.8J TO 20J THE EXTENT OF LEAD CONTAMINATION IN THE SOIL AT THE CITY OF LEEDS LANDFILL IS SHOWN IN FIGURE 9.

SEDIMENTS - SURFACE WATER WAS NOT SAMPLED AT THIS SUBSITE. SEDIMENTS DETECTED LEAD, CHROMIUM AND NICKEL.

AIR - AIR SAMPLES DETECTED LEAD, ANTIMONY, ARSENIC, AND CHROMIUM.

#### ACMAR CHURCH OF GOD

GROUNDWATER - LEAD WAS DETECTED IN THE UPGRADIENT MONITOR WELL GS-2 AT 10 UG/L AND IN THE DOWNGRAIENT MONITOR WELL GA-1 AT 6 UG/L. BOTH OF THESE UNFILTERED GROUNDWATER SAMPLES WERE TURBID. NONE OF THE OTHER PARAMETERS WERE DETECTED IN THE TWO MONITOR WELLS. THE LEAD, SPECIFIC CONDUCTIVITY, PH FOR EACH MONITOR WELL ARE SHOWN IN FIGURE 10. INSUFFICIENT DATA POINTS WERE AVAILABLE FOR PREPARING A MAP SHOWING, AS CONTOURS, THE APPROXIMATE DISTRIBUTION OF LEAD IN GROUNDWATER.

SOIL - AN EMERGENCY RESPONSE REMEDIAL ACTION AT THE ACMAR CHURCH OF GOD REMOVED SOME OF THE CONTAMINATED SOIL; HOWEVER, LEAD CONCENTRATIONS EXCEEDING 300 MG/KG WERE DETECTED IN BOTH SURFACE AND SUBSURFACE SOIL SAMPLES. THE SURFACE SOIL SAMPLES WITH LEAD CONCENTRATIONS EXCEEDING 300 MG/KG WERE LOCATED IN THE DRIVE LEADING TO THE CHURCH AND ALONG THE SLOPING EASTERN EDGE OF THE SITE. IN THE 2 TO 4.5 FOOT DEPTH INTERVAL, LEAD CONCENTRATIONS EXCEEDING 300 MG/KG WERE DETECTED IN SAMPLES FROM THE EASTERN EDGE OF THE SITE. ANALYTICAL RESULTS FOUND LEAD AT 960 MG/KG. XRF DATA RANGED FROM 12 MG/KG TO 32,225 MG/KG FOR LEAD. ONLY ONE SAMPLE WAS ANALYZED FOR OTHER PARAMETERS, AND THE RESULTS WERE 19 MG/KG FOR NICKEL, 12 MG/KG FOR CHROMIUM, 12 MG/KG FOR ARSENIC AND 46 MG/KG FOR COPPER. THE EXTENT OF LEAD CONTAMINATION IN THE SOIL AT THE ACMAR CHURCH OF GOD IS SHOWN IN FIGURE 10.

SEDIMENT - NO SURFACE WATER WAS SAMPLED AT THIS SUBSITE. SEDIMENTS CONTAINED LEAD, CHROMIUM AND NICKEL.

AIR - NO AIR CONTAMINANTS WERE DETECTED.

#### **#SSR**

##### **SUMMARY OF SITE RISKS**

CERCLA DIRECTS THE AGENCY TO PROTECT HUMAN HEALTH AND THE ENVIRONMENT FROM CURRENT AND POTENTIAL EXPOSURE TO HAZARDOUS SUBSTANCES AT THE SITE. IN ORDER TO ASSESS THE CURRENT AND POTENTIAL RISK FROM THE SITE, A BASELINE RISK ASSESSMENT WAS CONDUCTED AS PART OF THE RI. A DETAILED DISCUSSION OF THE RESULTS OF THAT INVESTIGATION CAN BE FOUND IN CHAPTER 7 OF THE RI REPORT. THIS ASSESSMENT EVALUATED THE POTENTIAL RISK POSED BY THE SITE TO HUMANS AND THE ENVIRONMENT WITHOUT THE BENEFIT OF ANY FURTHER REMEDIATION. THE ASSESSMENT FOCUSED ON LEAD WHICH IS THE PRIMARY CONTAMINANT OF CONCERN. OTHER CONTAMINANTS OF CONCERN INCLUDE ANTIMONY, ARSENIC, CADMIUM, CHROMIUM AND NICKEL. THE RESULTS OF THE RISK ASSESSMENT SHOW THAT LEAD IS THE MAJOR CONTAMINANT OF CONCERN RESULTING FROM DISPOSAL OF ILCO WASTE AT THE SUBSITES. THE OTHER CONSTITUENTS CONTRIBUTE ADDITIONAL RISKS FROM EXPOSURE TO THE WASTE AND MAY INFLUENCE THE SELECTION OF REMEDIATION LEVELS FOR LEAD. REMEDIATION MEASURES TO CONTROL CONTACT WITH LEAD OR REDUCE MOBILITY OF LEAD WILL CONCURRENTLY REDUCE HAZARDS FROM THE OTHER WASTE CONSTITUENTS.

ALTHOUGH SPECIFIC CONDITIONS VARY AT THE ILCO SUBSITES, THE GENERAL EXPOSURE PATHWAY INFORMATION APPLIES TO ALL OF THE SUBSITES. THE SOURCE OF CONTAMINATION IS THE WASTE MATERIALS THAT WERE USED AS FILL MATERIAL AT THE SUBSITES. IN ADDITION TO DIRECT CONTACT WITH WASTE AT THE SURFACE, CONTAMINANTS MAY BE TRANSPORTED TO GROUNDWATER BY MEANS OF INFILTRATING RAINWATER OR CARRIED TO ADJACENT SURFACE WATER BODIES BY STORM WATER RUNOFF OR WIND EROSION. DUST FROM THE SITES MAY BE RELEASED TO THE AIR.

#### CONTAMINANTS OF CONCERN

BASED ON THE HISTORICAL INFORMATION RELATING TO THE ILCO SUPERFUND SITE AND SAMPLING RESULTS FROM THE RI, THE PRIMARY CONTAMINANT AT THE SITE IS LEAD. ALTHOUGH LEAD IS THE PRIMARY

CONTAMINANT OTHER INORGANICS WERE DETECTED AT THE SITE IN EXCESS OF BACKGROUND CONDITIONS. THE SECONDARY CONTAMINANTS OF CONCERN INCLUDE ANTIMONY, ARSENIC, CADMIUM, CHROMIUM, AND NICKEL. THESE CONTAMINANTS WERE PRESENT IN GROUNDWATER AND SOILS FROM THE SITE.

#### EXPOSURE ASSESSMENT

EXPOSURE ASSESSMENT IS THE ESTIMATION OF THE FREQUENCY, DURATION, AND ROUTES OF EXPOSURE TO HUMANS. WHETHER A CHEMICAL IS ACTUALLY A CONCERN TO HUMAN HEALTH AND THE ENVIRONMENT DEPENDS UPON THE LIKELIHOOD OF EXPOSURE, I.E. WHETHER THE EXPOSURE PATHWAY IS COMPLETE. A COMPLETE EXPOSURE PATHWAY (A SEQUENCE OF EVENTS LEADING TO CONTACT WITH A CHEMICAL) IS DEFINED BY THE FOLLOWING FOUR ELEMENTS:

- A SOURCE AND MECHANISM OF RELEASE FROM THE SOURCE,
- A TRANSPORT MEDIUM (E.G., SURFACE WATER, AIR) AND MECHANISMS OF MIGRATION THROUGH THE MEDIUM,
- THE PRESENCE OF A RECEPTOR AT THE EXPOSURE POINT, AND
- A ROUTE OF EXPOSURE (INGESTION, INHALATION, DERMAL ABSORPTION).

IF ALL FOUR ELEMENTS ARE NOT PRESENT, THE PATHWAY IS NOT COMPLETE. ALTHOUGH THE PATHWAYS DIFFER AT EACH SUBSITE, THE PRINCIPLE POTENTIAL PATHWAYS OF EXPOSURE FOR ALL OF THE ILCO SUBSITES IS DIRECT CONTACT WITH CONTAMINATED SOILS OR SEDIMENTS, CONTAMINATED GROUNDWATER CONSUMPTION, AND INHALATION OF CONTAMINATED DUST. THE CURRENT AND POTENTIAL FUTURE EXPOSURE SCENARIOS FOR EACH SUBSITE ARE DISCUSSED WITHIN THIS SECTION.

THE RESIDENTIAL SCENARIO POSES POTENTIAL FOR THE GREATEST EXPOSURE. THIS SCENARIO WAS USED TO EVALUATE THE CONNELL PROPERTY, FLEMING'S PATIO, J & L FABRICATORS, THE GULF SERVICE STATION, AND THE ACMAR CHURCH OF GOD. EXPOSURE WAS ASSUMED TO OCCUR FOR 365 DAYS/YR FOR 30 YEARS. INGESTION OF WATER IS ASSUMED TO BE 2 LITER/DAY FOR AN ADULT AND 1 LITER/DAY FOR A CHILD. INGESTION OF SOIL IS ASSUMED TO BE 0.1 GRAMS/DAY FOR AN ADULT AND 0.2 GRAMS/DAY FOR A CHILD. INHALATION OF SOIL IS ASSUMED 1.4M3/HOUR FOR AN ADULT AND 0.33 M3/HOUR FOR A CHILD.

THE INDUSTRIAL/COMMERCIAL SCENARIO ASSUMES A MORE LIMITED EXPOSURE DURING A WORKING DAY, WITH REDUCED EXPOSURE TO OUTSIDE SOILS. THIS SCENARIO WAS USED TO EVALUATE THE ILCO PARKING LOT. EXPOSURE WAS ASSUMED TO OCCUR FOR 365 DAYS/YR FOR 20 YEARS.

THE RECREATIONAL SCENARIO RESULTS IN INCREASED EXPOSURE OF CHILDREN TO CONTAMINANTS IN AREAS THAT ARE NOT EXPECTED TO BECOME RESIDENTIAL. THIS SCENARIO WAS USED TO EVALUATE THE CITY OF LEEDS LANDFILL. EXPOSURE WAS ASSUMED TO OCCUR FOR 365 DAYS/YR FOR 10 YEARS.

#### PARKING LOT

THE PARKING LOT SITE IS LOCATED IN AN AREA ZONED FOR HEAVY INDUSTRY. SURROUNDING PROPERTIES INCLUDE LIGHT INDUSTRIAL, COMMERCIAL, AND RESIDENTIAL USES.

THE CURRENT EXPOSURE SCENARIOS ARE:

- DIRECT CONTACT WITH CONTAMINATED SOIL AND INHALATION OF DUST CONTAINING CONTAMINANTS BY WORKERS.
- INGESTION OF OFFSITE CONTAMINATED GROUNDWATER AND/OR FISH BY RESIDENTS AND THE ADULT PUBLIC FROM SURFACE WATER/SEDIMENT CONTACT IN DRY CREEK.

THE FUTURE EXPOSURE SCENARIO IS:



- INGESTION OF CONTAMINATED GROUNDWATER FROM LOCAL WELLS USED FOR POTABLE WATER SUPPLY BY RESIDENTS.

#### GULF SERVICE STATION

THE GULF SERVICE STATION IS LOCATED IN THE CENTER OF LEEDS, AND LARGE NUMBERS OF INDIVIDUALS MAY BE SUBJECTED TO SHORT-TERM EXPOSURES TO THE ILCO WASTES. THE CONTAMINATED AREA IS LOCATED SEVERAL HUNDRED FEET WEST OF THE STATION AND HAS BEEN COVERED WITH A ROCK WOOL MIXTURE. THERE IS VEGETATION AND OTHER NATURAL COVER ON THE SITE, WHICH WOULD REDUCE THE EFFECT OF SURFACE RUNOFF AND THE RESULTANT EROSION. THE OWNERS HAVE LIVED IN THE IMMEDIATE VICINITY OF THE FILL AREA. AN ELEMENTARY SCHOOL IS LOCATED ACROSS THE STREET.

THE CURRENT EXPOSURE SCENARIOS ARE:

- DIRECT CONTACT WITH CONTAMINATED SOIL AND INHALATION OF CONTAMINATED DUST BY WORKERS.
- DIRECT EXPOSURE TO CONTAMINATED SOIL BY THE PUBLIC AND SPECIFICALLY PUBLIC CHILDREN TRESPASSERS BECAUSE THERE IS A SCHOOL NEARBY AND THERE IS NO ACCESS RESTRICTION.
- CONTACT WITH SURFACE WATER AND/OR SEDIMENT OR THROUGH INGESTION OF FISH IN LITTLE CAHABA RIVER BY THE PUBLIC.

THE FUTURE EXPOSURE SCENARIOS ARE:

- CONTINUED DIRECT CONTACT WITH CONTAMINATED SOIL BY RESIDENTS.
- INGESTION OF CONTAMINATED GROUNDWATER FROM LOCAL WELLS BY RESIDENTS.

#### J&L FABRICATORS

AS A STEEL-FABRICATING COMPANY, J&L FABRICATORS REPRESENTS AN INDUSTRIAL SETTING. HOWEVER, HOMES ARE LOCATED ADJACENT TO THE FACILITY, AND ACCESS TO THE SITE IS NOT RESTRICTED. THEREFORE, ALTHOUGH EXPOSURES TO WORKERS OCCUR ONSITE, THE MORE SENSITIVE POPULATIONS IN THE AREA ARE LIKELY TO BE CHILDREN IN THE ADJACENT HOMES. NEARBY RESIDENTS COULD ALSO BE AFFECTED BY WIND EROSION AND DEPOSITION THAT COULD RESULT IN CONTAMINANTS IN SOILS AT THEIR RESIDENCES. EXPOSURES PROTECTIVE OF THE RESIDENTS ARE EXPECTED TO BE PROTECTIVE OF THE WORKERS. THE BACK PORTION OF THE PROPERTY WAS USED AS A FILL AREA FOR ILCO WASTES. THE SURFACE OF THE FILL AREA IS REPORTED TO BE COVERED WITH SAND AND ROCK WOOL. THERE ARE NO REPORTS OF TOPSOIL COVER, SUCH AS GRASS OR OTHER VEGETATION, THAT WOULD REDUCE EROSION AND THE RESULTANT MOVEMENT OF CONTAMINATED SOIL OFFSITE. CURRENT EXPOSURE SCENARIOS:

- DIRECT CONTACT WITH CONTAMINATED SOILS AND INHALATION OF CONTAMINATED DUST BY WORKERS AND RESIDENTS.
- INGESTION OF FISH, SURFACE WATER OR SEDIMENT BY RESIDENTS. CHILDREN MAY PLAY IN THE CREEK.

FUTURE EXPOSURE SCENARIOS:

- INGESTION OF GROUNDWATER FROM LOCAL WELLS BY RESIDENTS.

#### FLEMING'S PATIO

FLEMING'S PATIO IS A RESTAURANT AND BAR LOCATED EAST OF THE RUSSELL HEIGHTS SUBDIVISION OF LEEDS

IN A HILLY, WOODED AREA. BOTH FURNACE SLAG AND WASTEWATER TREATMENT SLUDGE WERE DEPOSITED AT THIS LOCATION. WASTES FROM THE ILCO OPERATION WERE DISPOSED IN TWO LOCATIONS IN THIS AREA. ONE AREA INCLUDES THE RESTAURANT/TAVERN, WHICH IS BORDERED ON TWO SIDES BY FILL. THE SURFACE OF THIS FILL AREA IS COVERED WITH A CLAY AND GRAVEL MIXTURE. THE BACK PORTION OF THE AREA HAS BEEN ROPED OFF, AND A PATCHY GRASS COVER HAS BEEN ESTABLISHED. THE FRONT PORTION IS USED AS A PARKING LOT FOR THE TAVERN. THE SECOND FILL AREA IS LOCATED ACROSS THE STREET FROM THE TAVERN AND APPEARS TO BE USED AS ADDITIONAL PARKING FOR FLEMING'S PATIO. A PORTION OF THE FILL AREA CONTAINING SLAG MATERIAL AT THE SURFACE HAS BEEN COVERED WITH A CLAY AND GRAVEL MIXTURE. THE REMAINDER OF THE FILL AREA HAS BEEN COVERED WITH ROCK WOOL.

CURRENT EXPOSURE SCENARIOS:

- DIRECT CONTACT TO CONTAMINATED SOILS AND INHALATION OF CONTAMINATED DUST BY WORKERS AND RESIDENTS.

FUTURE EXPOSURE SCENARIOS:

- INGESTION OF GROUNDWATER FROM LOCAL WELLS BY RESIDENTS.

CONNELL PROPERTY

THERE ARE TWO HOUSES AND A TRAILER ON THE CONNELL PROPERTY. ONE OF THE HOUSES WAS BUILT IN A LOW AREA ADJACENT TO A SWAMP. IT IS SERVED BY A SEPTIC TANK. THE AREA IN BACK OF THE HOUSE WAS FILLED USING SLAG, AND POSSIBLY SLUDGE. THE FILL AREA HAS BEEN COVERED WITH SOIL AND CHERT, AND A GRASS COVER HAS BEEN ESTABLISHED. THE WESTERN EDGE OF THE FILL DROPS THREE FEET TO A DRAINAGEWAY. THE TRAILER HOUSE IS LOCATED ON TOP OF THE FILLED AREA.

CURRENT EXPOSURE SCENARIOS:

- DIRECT CONTACT WITH CONTAMINATED SOIL AND INHALATION OF CONTAMINATED DUST BY RESIDENTS.

FUTURE EXPOSURE SCENARIOS:

- INGESTION OF GROUNDWATER FROM LOCAL WELLS BY FUTURE RESIDENTS.
- INGESTION BY FUTURE RESIDENTS OF VEGETABLES FROM GARDENS GROWN ONSITE IN CONTAMINATED SOIL.

CITY OF LEEDS MUNICIPAL LANDFILL

THE LANDFILL ENCOMPASSES APPROXIMATELY EIGHT ACRES. IT IS UNLINED AND IS CURRENTLY OPERATED BY THE CITY OF LEEDS FOR THE DISPOSAL OF TREE LIMBS AND DEMOLITION DEBRIS. THE SURROUNDING AREA IS HILLY AND HEAVILY WOODED. FROM 1976 TO 1980, FURNACE SLAG, BATTERY CASINGS, AND WASTEWATER TREATMENT SLUDGE WERE DISPOSED AT THE SITE.

CURRENT EXPOSURE SCENARIOS:

- DIRECT CONTACT WITH CONTAMINANTS IN SOIL BY WORKERS.
- INHALATION OF CONTAMINATED DUST BY WORKERS AND OFFSITE RESIDENTS.

FUTURE EXPOSURE SCENARIOS (FUTURE LAND USE IS CONSIDERED TO BE RECREATIONAL. THERE ARE NO PRESENT PLANS TO DEVELOP THIS SITE. HOWEVER, A REASONABLE CHANGE IN LAND USE MAY BE RECREATION,

IN WHICH INCREASED PUBLIC EXPOSURES MAY OCCUR.):

- DIRECT CONTACT WITH CONTAMINATED SOIL AND INHALATION OF CONTAMINATED DUST.
- INGESTION OF GROUNDWATER FROM LOCAL WELLS BY FUTURE RESIDENTS.

#### ACMAR CHURCH OF GOD

THE ACMAR CHURCH OF GOD IS LOCATED BETWEEN ACMAR ROAD AND A DEEP RAVINE APPROXIMATELY 1.9 ACRES IN SIZE. THE RAVINE WAS CREATED BY FORMER COAL STRIP-MINING OPERATIONS THAT OCCURRED IN THE AREA. THE ILCO SLAG WAS PLACED ON THE STEEP EMBANKMENT OF THE RAVINE. THE EMBANKMENT DROPS APPROXIMATELY 40 FEET TO THE BASE OF THE RAVINE. THE EMBANKMENT IS COVERED BY KUDZU VINES.

#### CURRENT EXPOSURE SCENARIOS:

- DIRECT CONTACT WITH CONTAMINATED SOIL BY THE PUBLIC.

#### FUTURE EXPOSURE SCENARIOS:

- DIRECT CONTACT WITH CONTAMINANTS IN SURFICIAL SOIL AND INGESTION OF GROUNDWATER FROM LOCAL WELLS BY FUTURE RESIDENTS.

#### TOXICITY ASSESSMENT

TO ASSESS THE POSSIBLE TOXICOLOGICAL EFFECTS FROM EXPOSURE, HUMAN HEALTH CRITERIA ARE DERIVED FROM A REVIEW OF HEALTH AND ENVIRONMENTAL STANDARDS AND PUBLISHED TOXICOLOGICAL STUDIES. FOR RISK ASSESSMENT PURPOSES, INDIVIDUAL POLLUTANTS ARE SEPARATED INTO TWO CATEGORIES OF CHEMICAL TOXICITY: NONCARCINOGENIC AND CARCINOGENIC. FOR NONCARCINOGENIC CHEMICALS, REFERENCE DOSES (RFDs) HAVE BEEN DEVELOPED BY EPA FOR INDICATING THE POTENTIAL FOR ADVERSE HEALTH EFFECTS FROM EXPOSURE TO THESE CHEMICALS. RFDs, WHICH ARE EXPRESSED IN UNITS OF MG/KG-DAY, ARE ESTIMATES OF LIFETIME DAILY EXPOSURE LEVELS FOR HUMANS, INCLUDING SENSITIVE INDIVIDUALS THAT WILL RESULT IN NO ADVERSE HEALTH EFFECT. ESTIMATED INTAKES OF CHEMICALS FROM ENVIRONMENTAL MEDIA (E.G., THE AMOUNT OF A CHEMICAL INGESTED FROM CONTAMINATED DRINKING WATER) CAN BE COMPARED TO THE RFD. RFDs ARE DERIVED FROM HUMAN EPIDEMIOLOGICAL STUDIES OR ANIMAL STUDIES TO WHICH UNCERTAINTY FACTORS HAVE BEEN APPLIED (E.G., TO ACCOUNT FOR THE USE OF ANIMAL DATA TO PREDICT EFFECTS ON HUMANS). THESE UNCERTAINTY FACTORS HELP ENSURE THAT THE RFDs WILL NOT UNDERESTIMATE THE POTENTIAL FOR ADVERSE NONCARCINOGENIC EFFECTS TO OCCUR. THE RFDs FOR ORAL INGESTION AND INHALATION EXPOSURE TO THE CONTAMINANTS OF CONCERN AT THE SUBSITES ARE CONTAINED IN TABLE 3.

UNLIKE NONCARCINOGENS, CARCINOGENS DO NOT HAVE THRESHOLD EXPOSURE LEVELS WHICH WILL RESULT IN NO ADVERSE HEALTH EFFECTS. RATHER CPFS HAVE BEEN DEVELOPED BY EPA'S CARCINOGENIC ASSESSMENT GROUP FOR ESTIMATING EXCESS LIFETIME CANCER RISKS ASSOCIATED WITH EXPOSURE TO POTENTIALLY CARCINOGENIC CHEMICALS. CPFS, WHICH ARE EXPRESSED IN UNITS OF (MG/KG-DAY)<sup>-1</sup>, ARE MULTIPLIED BY THE ESTIMATED INTAKE OF A POTENTIAL CARCINOGEN, IN MG/KG-DAY, TO PROVIDE AN UPPER-BOUND ESTIMATE OF THE EXCESS LIFETIME CANCER RISK ASSOCIATED WITH EXPOSURE AT THAT INTAKE LEVEL. THE TERM "UPPER BOUND" REFLECTS THE CONSERVATIVE ESTIMATE OF THE RISKS CALCULATED FROM THE CPF. USE OF THIS APPROACH MAKES UNDERESTIMATION OF THE ACTUAL CANCER RISK HIGHLY UNLIKELY. CANCER POTENCY FACTORS ARE DERIVED FROM THE RESULT OF HUMAN EPIDEMIOLOGICAL STUDIES OR CHRONIC ANIMAL BIOASSAYS TO WHICH ANIMAL-TO-HUMAN EXTRAPOLATION FACTORS HAVE BEEN APPLIED. THE CPFS FOR ORAL INGESTION AND INHALATION EXPOSURE TO THE CONTAMINANTS OF CONCERN AT THE SUBSITES ARE CONTAINED IN TABLE 3.

#### RISK CHARACTERIZATION SUMMARY

RISK CHARACTERIZATION INVOLVES COMBINING THE RESULTS OF THE EXPOSURE AND TOXICITY ASSESSMENTS TO

DEVELOP A NUMERICAL ESTIMATE OF THE HEALTH RISK ASSOCIATED WITH THE CONTAMINANTS PRESENT AT EACH OF THE ILCO SUBSITES. THE RISK CHARACTERIZATION IS BASED ON IDENTIFYING POTENTIAL CHEMICALS OF CONCERN AND DEVELOPING EXPOSURE SCENARIOS FOR EACH OF THE POTENTIAL AND FUTURE EXPOSURE PATHWAYS.

POTENTIAL CONCERN FOR NONCARCINOGENIC EFFECTS OF A SINGLE CONTAMINANT IN A SINGLE MEDIUM IS EXPRESSED AS THE HAZARD QUOTIENT (HQ) (OR THE RATIO OF THE ESTIMATED INTAKE DERIVED FROM THE CONTAMINANT CONCENTRATION IN A GIVEN MEDIUM TO THE CONTAMINANT'S REFERENCE DOSE). BY ADDING THE HQS FOR ALL CONTAMINANTS WITHIN A MEDIUM OR ACROSS ALL MEDIA TO WHICH A GIVEN POPULATION MAY REASONABLY BE EXPOSED, THE HAZARD INDEX (HI) CAN BE GENERATED. THE HI PROVIDES A USEFUL REFERENCE POINT FOR GAUGING THE POTENTIAL SIGNIFICANCE OF MULTIPLE CONTAMINANT EXPOSURES WITHIN A SINGLE MEDIUM OR ACROSS MEDIA.

EXCESS LIFETIME CANCER RISKS ARE DETERMINED BY MULTIPLYING THE INTAKE LEVEL WITH THE CANCER POTENCY FACTOR. THESE RISKS ARE PROBABILITIES THAT ARE GENERALLY EXPRESSED IN SCIENTIFIC NOTATION ((E.G.,  $1 \times (10^{-6})$  OR  $1E-6$ )). AN EXCESS LIFETIME CANCER RISK OF  $1 \times (10^{-6})$  INDICATES THAT, AS A PLAUSIBLE UPPER BOUND, AN INDIVIDUAL HAS A ONE IN ONE MILLION CHANCE OF DEVELOPING CANCER AS A RESULT OF SITE-RELATED EXPOSURE TO A CARCINOGEN OVER A 70-YEAR LIFETIME UNDER THE SPECIFIC EXPOSURE CONDITIONS AT A SITE.

FOR NONCARCINOGENS, A HAZARD INDEX IN EXCESS OF ONE INDICATE A POTENTIAL ADVERSE IMPACT TO HUMAN HEALTH SHOULD EXPOSURE TO THE CONTAMINANT LEVELS PRESENT AT A SPECIFIC SUBSITE OCCUR. EXPOSURE PATHWAYS WHICH WERE EVALUATED AND DETERMINED TO POSE A RISK GREATER THAN  $1 \times (10^{-6})$  INDICATE AN UNACCEPTABLE INCREASED POSSIBILITY OF CONTACTING CANCER AS A RESULT OF EXPOSURE TO THE WASTE PRESENT, COMPARED TO THE PROBABILITY IF NO EXPOSURE OCCURRED. THE  $1 \times (10^{-6})$  RISK LEVEL IS CONSIDERED THE GOAL FOR REMEDIATION AT SUPERFUND SITES. (SEE 40 CFR 300.430(E)(2)(I)(A)(2)).

AS SHOWN IN TABLE 4, THE PRIMARY RISK ASSOCIATED WITH THE ILCO SITE IS THROUGH INGESTION AND INHALATION OF CONTAMINATED SOILS. ALL OF THE SUBSITES HAVE A HAZARD INDEX OF ONE OR GREATER THAN ONE FOR INGESTION OR INHALATION OF CONTAMINATED SOILS. INGESTION OF CONTAMINATED GROUNDWATER AT SEVERAL SUBSITES CARRIES A HAZARD INDEX OF ONE OR GREATER THAN ONE (ILCO PARKING LOT, J & L FABRICATORS, FLEMING'S PATIO, CONNELL PROPERTY, AND THE LEEDS LANDFILL). PARTICULARLY, THE HAZARD INDEX FOR CONSUMPTION OF GROUNDWATER AT THE ILCO PARKING LOT SUBSITE IS TWO TO FIVE HUNDRED TIMES GREATER THAN THE HAZARD INDEX GOAL OF 1. IT SHOULD BE NOTED, HOWEVER, THAT THIS SUBSITE WILL BE ADDRESSED THROUGH A SEPARATE ACTION PURSUANT TO RCRA. CONTAMINATION AT THE REMAINING SUBSITES HAVE BEEN EVALUATED BY EPA PURSUANT TO 40 CFR 300.430. IN ADDITION, GROUNDWATER MODELING INDICATES THAT SOIL LEVELS EXCEEDING 300 MG/KG LEAD COULD CAUSE LEAD LEACHING INTO THE GROUNDWATER RESULTING IN GROUNDWATER LEAD LEVELS EXCEEDING THE LEAD ACTION LEVEL OF 15 UG/L.

THE  $1 \times (10^{-6})$  RISK LEVEL FOR SOIL INGESTION OR INHALATION IS EXCEEDED AT THE ILCO PARKING LOT, J & L FABRICATORS, FLEMING'S PATIO, THE CONNELL PROPERTY, LEEDS LANDFILL AND THE ACMAR CHURCH OF GOD. THE PARKING LOT AND LEEDS LANDFILL ARE THE ONLY SUBSITES THAT EXCEED THE  $1 \times (10^{-6})$  REMEDIATION GOAL FOR GROUNDWATER.

ACTUAL OR THREATENED RELEASES OF HAZARDOUS SUBSTANCES FROM THIS SITE, IF NOT ADDRESSED BY IMPLEMENTING THE RESPONSE ACTION SELECTED IN THIS ROD, MAY PRESENT AN IMMINENT AND SUBSTANTIAL ENDANGERMENT TO PUBLIC HEALTH, WELFARE, OR THE ENVIRONMENT.

#### ENVIRONMENTAL RISKS

DATA CONCERNING AVAILABLE CHEMICAL, PHYSICAL, AND BIOLOGICAL PARAMETERS FROM EACH SITE AS WELL AS RECENT LITERATURE ON EACH OF THE CONTAMINANTS OF CONCERN WERE REVIEWED. FOR EXAMPLE, AMBIENT WATER QUALITY CRITERIA (AWQC) FOR THE PROTECTION OF FRESHWATER AQUATIC LIFE HAVE BEEN

ESTABLISHED UNDER THE US CLEAN WATER ACT FOR A NUMBER OF CHEMICALS. THESE CRITERIA ARE DEVELOPED TO BE PROTECTIVE OF 95 PERCENT OF ALL AQUATIC SPECIES, AND THEREFORE PROTECT FISH, AQUATIC INVERTEBRATES, AND PLANTS. AS PART OF THE NATIONAL STATUS AND TRENDS (NS & T) PROGRAM, THE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION (NOAA) HAS COMPILED DATA ON CHEMICALLY ANALYZED SEDIMENTS FROM COASTAL MARINE AND ESTUARINE ENVIRONMENTS THROUGHOUT THE UNITED STATES.

RESULTS OF SURFACE WATER AND SEDIMENT ANALYSES FROM EACH SITE WERE PRIMARILY CONSIDERED IN THE EXAMINATION OF POTENTIAL IMPACTS TO AQUATIC COMMUNITIES, BUT WERE ALSO CONSIDERED IN THE IMPACTS ON ASSOCIATED TERRESTRIAL ANIMALS. GROUNDWATER DATA WERE REVIEWED IN CASES WHERE CONTAMINATED GROUNDWATER COULD POTENTIALLY MIX WITH SURFACE WATER. DATA CONCERNING SOIL CONTAMINATION WERE EXAMINED IN INSTANCES WHERE SOIL EROSION OR DIRECT EXPOSURE COULD POTENTIALLY AFFECT TERRESTRIAL ORGANISMS. CONTAMINANTS THAT WERE DETECTED AT LEVELS THAT EXCEEDED ESTABLISHED CRITERIA OR GUIDANCE FOR A PARTICULAR MEDIUM WERE CONSIDERED FOR FURTHER DISCUSSION IN THE SITE-SPECIFIC RISK CHARACTERIZATIONS.

#### ILCO PARKING LOT

THERE IS A POTENTIAL IMPACT ON THE AQUATIC COMMUNITIES OF THE NORTHERN PORTION OF THE UNNAMED TRIBUTARY AND DRY CREEK THROUGH CONTAMINATION BY GROUNDWATER MOVEMENT, SURFACE WATER RUNOFF, AND POSSIBLE SOIL EROSION FROM THE WESTERN EDGE OF THE PARKING LOT. SURFACE WATER IN DRY CREEK AND THE UNNAMED TRIBUTARY IS A SOURCE OF DRINKING WATER FOR TERRESTRIAL ANIMALS AND BIRDS LIVING IN THE AREA.

ACUTELY TOXIC CONCENTRATIONS OF LEAD AND CADMIUM WERE HIGHER IN THE SEGMENT OF THE UNNAMED TRIBUTARY ADJACENT TO THE PARKING LOT THAN IN THE SEGMENT UPSTREAM AT THE MAIN FACILITY. AT THE DOWNSTREAM SAMPLING LOCATION, SP-1, IN DRY CREEK, THE CONCENTRATION OF CADMIUM IN SURFACE WATER WAS BELOW THE AWQC. THE LEAD CONCENTRATION ALSO DECREASED AT THIS STATION, BUT REMAINED ABOVE CRITERIA. AQUATIC COMMUNITIES WOULD BE ADVERSELY AFFECTED BY LEAD AND CADMIUM LEVELS ABOVE THE AWQC. WILDLIFE WOULD BE MORE LIKELY TO FREQUENT DRY CREEK, WHICH IS WIDER AND DEEPER THAN THE UNNAMED TRIBUTARY. THE UNNAMED TRIBUTARY ALSO HAS VERY LIMITED HABITAT. HOWEVER, THE HIGHEST CONCENTRATION OF LEAD DETECTED IN THE SURFACE WATER (1,200 UG/L AT SP-2) IS BELOW THE RANGE OF NO OBSERVABLE EFFECT LEVELS (NOELS) OBSERVED FOR BIRDS AND MAMMALS (10 TO 50 MG/L). LITERATURE REGARDING TOXICITY OF LEAD TO AMPHIBIANS INDICATED THAT THE CONTAMINANTS IN THE CREEKS WOULD AFFECT THEM.

IN THE UNNAMED TRIBUTARY, THE HIGHEST CONCENTRATIONS OF CADMIUM AND CHROMIUM IN THE SEDIMENT, 62 MG/KG AND 110 MG/KG, RESPECTIVELY, EXCEEDED THE KNOWN DIETARY CONCENTRATIONS THAT PRODUCE ADVERSE EFFECTS IN MAMMALS AND BIRDS. THE UNNAMED TRIBUTARY WILL BE ADDRESSED IN OU #2.

#### GULF SERVICE STATION

THE GULF SERVICE STATION IS LOCATED IN DOWNTOWN LEEDS ADJACENT TO THE LITTLE CAHABA RIVER. TERRESTRIAL HABITAT IS LIMITED TO A VARIETY OF GRASSES AND SHRUBS GROWING ALONG THE FILL AREA AND THE LITTLE CAHABA FLOODPLAIN. CONTAMINATED SURFACE SOIL ENTERS THE RIVER THROUGH EROSION AND SURFACE WATER RUNOFF. THIS MIGRATION PRESENTS A POTENTIAL HEALTH RISK TO AQUATIC ORGANISMS IN THE LITTLE CAHABA RIVER. THIS RIVER IS KNOWN TO CONTAIN GREEN SUNFISH, LONG-EARED SUNFISH, BLUEGILL, SMALLMOUTH BASS, LARGEMOUTH BASS, AND NORTHERN HOGSUCKERS. THE RIVER IS ALSO EXPECTED TO PROVIDE HABITAT FOR NUMEROUS OTHER FISH, INVERTEBRATES, REPTILES, BIRDS, AND AQUATIC MAMMALS. TERRESTRIAL ANIMALS ARE NOT EXPECTED TO HAVE FREQUENT DIRECT CONTACT WITH THIS URBAN SITE BECAUSE OF HUMAN ACTIVITY AND LACK OF ABUNDANT FOOD AND COVER.

THREE SEDIMENT SAMPLES COLLECTED ADJACENT TO OR DOWNSTREAM OF THE SITE EXCEEDED THE REGIONAL AQUATIC SPECIES PROTECTION LEVEL FOR LEAD (50 MG/KG) WHILE THE UPSTREAM SAMPLES DID NOT. TWO OF THE LEAD SEDIMENT SAMPLES EXCEEDED THE EFFECTS RANGE MEDIAN (ER-M) VALUE OF 110 PPM. THE ER-M

FOR LEAD INDICATES THE CONCENTRATION ABOVE WHICH ADVERSE EFFECTS ARE FREQUENTLY OR ALWAYS OBSERVED. ABOVE THIS CONCENTRATION, SEDIMENT LEAD LEVELS COULD POTENTIALLY AFFECT AQUATIC LIFE, PRIMARILY BOTTOM-DWELLING FISH AND BENTHIC INVERTEBRATES.

#### J & L FABRICATORS

IMPACT ON AQUATIC COMMUNITIES (FISH AND INVERTEBRATES) IN DRY CREEK COULD POTENTIALLY OCCUR WITH SURFACE RUNOFF, SOIL EROSION, AND AIR AND GROUNDWATER TRANSPORT OF CONTAMINANTS FROM THE SITE.

THE MAXIMUM CONCENTRATION OF LEAD IN SURFACE WATER WAS 7 UG/L. IT EXCEEDS THE CHRONIC AWQC OF 3.2 UG/L FOR LEAD. FISH AND AQUATIC INVERTEBRATES EXPOSED TO LEAD CONCENTRATIONS GREATER THAN 3.2 UG/L WILL BE ADVERSELY AFFECTED. ON THE BASIS OF THE SURFACE WATER DATA, THE J & L FABRICATORS SUBSITE IS CONTINUING TO CONTRIBUTE UNACCEPTABLE LEVELS OF LEAD THAT WILL NEGATIVELY AFFECT THE AQUATIC BIOTA DOWNSTREAM DUE TO SURFACE WATER RUNOFF AND EROSION OF EXPOSED FILL MATERIAL.

SEDIMENT SAMPLES WERE FOUND TO CONTAIN DETECTABLE LEVELS OF LEAD, ANTIMONY, ARSENIC, CADMIUM, CHROMIUM, AND NICKEL. DURING DRY PERIODS, TERRESTRIAL ANIMALS SUCH AS RACCOONS COULD BE EXPOSED TO SEDIMENTS FROM DRY CREEK. CHROMIUM AND LEAD IN THE CONCENTRATIONS DETECTED (58 AND 100 MG/KG, RESPECTIVELY) WOULD BE OF CONCERN IF THESE SEDIMENTS WERE INGESTED BY WILDLIFE. ADVERSE EFFECTS OF CHROMIUM AND LEAD IN ANIMALS OCCUR AT DIETARY LEVELS AS LOW AS 10 MG/KG AND 50 MG/KG, RESPECTIVELY. CHROMIUM AND LEAD LEVELS CAN POTENTIALLY AFFECT BENTHIC INVERTEBRATES AND BOTTOM-DWELLING FISH IN DIRECT CONTACT WITH SEDIMENTS, AS WELL AS OTHER AQUATIC ANIMALS EXPOSED TO DESORBED METALS.

#### FLEMING'S PATIO

EXPOSURE OF WILDLIFE TO THE FILL AREAS IS POSSIBLE, BUT THE LACK OF COVER AND FOOD SOURCES MAY REDUCE THE FREQUENCY OF DIRECT CONTACT WITH CONTAMINATED SOIL.

AVERAGE LEAD AND CHROMIUM CONCENTRATIONS FOR THE DRAINAGEWAYS WERE 231 AND 31.8 UG/L, RESPECTIVELY, DIRECT INGESTION OF THESE CONCENTRATIONS OF METALS WOULD BE TOXIC TO WILDLIFE. WATER FLOW IS INTERMITTENT AND WOULD NOT BE SUITABLE FOR AQUATIC COMMUNITY DEVELOPMENT. EXPOSURE OF THESE SEDIMENTS TO TERRESTRIAL ANIMALS IS POSSIBLE BECAUSE OF THE HABITAT PROVIDED BY THE LARGE FORESTED AREAS ADJACENT TO THE SITE. THE POTENTIAL FOR DIRECT CONTACT WITH THE SEDIMENT IS GREATEST WITH ANIMALS SUCH AS THE RACCOON, WHICH WOULD ATTEMPT TO FEED IN THE DRAINAGEWAYS DURING PERIODS OF FLOW.

#### CONNELL PROPERTY

WILDLIFE INHABITING THESE WOODLANDS COULD POTENTIALLY BE AFFECTED BY SURFACE WATER RUNOFF OR GROUNDWATER TRANSPORT OF CONTAMINANTS FROM THE CONNELL PROPERTY. AQUATIC LIFE IS NOT EXPECTED TO OCCUR IN THESE INTERMITTENT DRAINAGE WAYS. GROUNDWATER CONTAMINATION OF SURFACE WATER IS NOT EXPECTED TO ADVERSELY AFFECT AQUATIC OR TERRESTRIAL LIFE.

THE WOODED AREA ADJACENT TO THE CONNELL PROPERTY IS EXPECTED TO CONTAIN A DIVERSE WILDLIFE POPULATION. SOME ANIMALS MAY BE ATTRACTED TO THE GRASS HABITAT ON THE PROPERTY. DIRECT CONTACT WITH CONTAMINATED SOIL ON THIS SITE MAY BE MINIMAL.

#### LEEDS LANDFILL

THE LANDFILL AREA PROVIDES RELATIVELY POOR QUALITY HABITAT (FOOD AND COVER) FOR TERRESTRIAL SPECIES, AND AS A RESULT THE AMOUNT OF WILDLIFE ACTIVITY AT THE LANDFILL IS PROBABLY QUITE LIMITED. BECAUSE OF THE INTERMITTENT NATURE OF THE SURFACE WATER RESOURCE, SIGNIFICANT

POPULATIONS OF AQUATIC LIFE ARE NOT EXPECTED TO BE PRESENT. AS A RESULT, EXPOSURE TO AQUATIC LIFE THROUGH DIRECT CONTACT WITH CONTAMINATED SURFACE WATER OR SEDIMENT IS CONSIDERED TO BE INSIGNIFICANT.

#### ACMAR CHURCH OF GOD

THE STEEP TOPOGRAPHY AROUND THE CHURCH IS CHARACTERIZED BY DENSE WOODLANDS AND A SMALL INTERMITTENT CREEK AT THE BASE OF A RAVINE. THE AREA IMMEDIATELY SOUTHEAST OF THE CHURCH IS COMPOSED OF A DENSE HARDWOOD-CONIFER FOREST AND NATURAL SHRUB VEGETATION, WHICH PROVIDES EXCELLENT HABITAT FOR A VARIETY OF TERRESTRIAL SPECIES.

WILDLIFE MAY OCCASIONALLY MOVE FROM THE PROTECTED WOODLAND TO THE RELATIVELY OPEN AREA FORMED BY THE CHURCH GROUNDS. HOWEVER, BECAUSE OF THE LIMITED VEGETATIVE GROWTH, THE FILL AREA, WHICH IS OVERGROWN WITH KUDZU VINES, PROVIDES RELATIVELY POOR-QUALITY HABITAT (FOOD AND COVER) FOR TERRESTRIAL SPECIES.

BY ADDRESSING THE HUMAN HEALTH CONCERNS AT THE ILCO SITE THE ENVIRONMENTAL CONCERNS WILL BE SATISFIED.

ACTUAL OR THREATENED RELEASES OF HAZARDOUS SUBSTANCES FROM THIS SITE, IF NOT ADDRESSED BY IMPLEMENTING THE RESPONSE ACTION SELECTED IN THIS ROD, MAY PRESENT AN IMMINENT AND SUBSTANTIAL ENDANGERMENT TO PUBLIC HEALTH, WELFARE, OR THE ENVIRONMENT.

#### MINTEQA2 MODELING RESULTS

IN ORDER TO EVALUATE THE POTENTIAL FOR TRACE METALS AT THE ILCO SUBSITES TO MIGRATE WITH GROUNDWATER THROUGH AND/OR INTO THE AQUIFERS, MINTEQA2, AN EQUILIBRIUM CHEMICAL SPECIATION MODEL FOR DILUTE AQUEOUS SYSTEMS, WAS USED. THIS MODEL EXAMINED THE LEAD LEVELS AND THE PH FOUND IN THE GROUNDWATER. AN ADSORPTION MODEL BASED ON RESEARCH DATA FOR A WISCONSIN SAND WAS USED. ADSORPTION IS WHEN GAS, VAPOR OR, IN THIS CASE, DISSOLVED MATTER (LEAD) ATTACHES ITSELF TO THE SURFACE OF A SOLID. THE SHALES AND LIMESTONE AT THE ILCO SUBSITES WOULD BE EXPECTED TO ADSORB EVEN MORE THAN THE SANDS MODELED. IN OTHER WORDS, THE ADSORPTION DATA PRESENTED SHOULD BE CONSERVATIVE BECAUSE THE FINAL EQUILIBRIUM ADSORPTION EXPECTED AT THE ILCO SUBSITES SHOULD BE EVEN STRONGER.

BESIDES THE MAIN FACILITY AND PARKING LOT THE MINTEQA2 MODEL WAS APPLIED USING DATA FROM FLEMING'S PATIO. THE MODEL WAS NOT USED FOR THE OTHER SUBSITES BECAUSE THE FILTERED TRACE METAL VALUES WERE AT LEVELS TOO LOW FOR USE IN THE MODEL. FILTERED SAMPLING RESULTS WERE USED FOR THE MINTEQA2 MODEL TO SHOW WHETHER PRECIPITATION OR ADSORPTION ARE TAKING PLACE. HOWEVER, EPA ONLY RECOGNIZES UNFILTERED SAMPLES FOR THE DETERMINATION OF WHETHER CONTAMINANTS EXIST IN THE GROUNDWATER.

THE MODEL SHOWED THAT ONCE THE PH RISES PAST THE PH 4-5 RANGE OR BECOMES LESS ACIDIC, ADSORPTION IS BY FAR THE MAIN FACTOR IN LIMITING THE SOLUBILITY OF LEAD. THAT IS BECAUSE THAT, DUE TO ADSORPTION, THE LEAD WOULD BE LESS LIKELY TO BE FOUND IN THE WATER ONCE THE PH RISES PAST THE PH OF 4-5 RANGE. LEAD AT THE ILCO SUBSITES APPEARS TO BE EVEN LESS MOBILE THAN PREDICTED ONCE THE SOURCE HAS BEEN REMOVED. THESE OBSERVATIONS INDICATE THAT, AT SUBSITES OTHER THAN THE PARKING LOT WHERE LEAD CONTAMINATION LEVELS ARE RELATIVELY LOW BUT PH VALUES ARE HIGHER, THE REMAINING DISSOLVED CONCENTRATIONS OF LEAD SHOULD BE VERY LOW AS EQUILIBRIUM BETWEEN THE SOIL AND WATER PARTICLES IS APPROACHED. AT THESE SUBSITES EPA CONCLUDES THAT THE LEAD WOULD HAVE A VERY STRONG TENDENCY TO ADHERE TO THE ROCK FORMATION SURFACE AND THEREFORE NOT DISSOLVE INTO THE GROUNDWATER.

#### REMEDIATION GOALS

BASED ON THE RESULTS OF THE BASELINE RISK ASSESSMENT, THE ILCO SITE PRESENTS A THREAT PRIMARILY DUE TO THE PRESENCE OF LEAD. IN ADDITION ARSENIC, CADMIUM, CHROMIUM, ANTIMONY, COPPER AND NICKEL MAY POSE AN ADDED THREAT. GROUNDWATER, SOIL, SURFACE WATER, SEDIMENT AND AIR REMEDIATION GOALS HAVE BEEN DEVELOPED BASED ON A SITE SPECIFIC RISK OR, WHEN AVAILABLE, EXISTING FEDERALLY REGULATED CRITERIA. REMEDIATION GOALS ARE PRESENTED ON TABLE 5.

ALTHOUGH INGESTION OF CONTAMINATED GROUNDWATER IS CONSIDERED A COMPLETE EXPOSURE PATHWAY, HEALTH BASED REMEDIATION GOALS WERE NOT DEVELOPED BECAUSE THE CONTAMINANTS OF CONCERN HAVE MAXIMUM CONCENTRATION LIMITS (MCLS) OR PROPOSED MCLS WHICH ARE APPLICABLE, RELEVANT AND APPROPRIATE REQUIREMENTS (ARARS) AND, THEREFORE, THESE LIMITS WILL BE USED AS REMEDIATION GOALS, WITH THE EXCEPTION OF LEAD.

THE CURRENT MCL OF 0.05 MG/L FOR LEAD WAS PROMULGATED AS AN INTERIM DRINKING WATER REGULATION IN 1975. SINCE THAT TIME, CONSIDERABLE HUMAN HEALTH INFORMATION HAS BEEN PRODUCED THAT INDICATES THAT THIS LEVEL MAY NOT BE PROTECTIVE AS A FINAL CLEANUP LEVEL FOR ALL POTENTIAL RECEPTORS. IN 1988, EPA PROPOSED A LEAD MCL OF 0.005 MG/L. A TREATMENT TECHNOLOGY FINAL RULE FOR LEAD AND COPPER WAS PUBLISHED ON JUNE 7, 1991 (56 FR NO. 110). THIS RULE PROVIDES AN MCLG AND AN ACTION LEVEL FOR BOTH METALS RESPECTIVELY, BUT NO MCL. THE RULE BECOMES EFFECTIVE IN NOVEMBER 1992, AT WHICH TIME THE CURRENT MCL FOR LEAD WILL NO LONGER EXIST. THE ACTION LEVEL MEASURED IN THE 90TH PERCENTILE AT THE TAP IS 15 UG/L (OR 0.015 MG/L) FOR LEAD AND 1,300 UG/L FOR COPPER. IN CONSIDERATION OF THIS INFORMATION, THE REMEDIATION LEVEL FOR GROUNDWATER AT THIS SITE IS SET AT A LEVEL OF 0.015 MG/L. APPENDIX B CONTAINS A MEMORANDUM THAT SUPPORTS THE 0.015 MG/L AS PROTECTIVE OF HUMAN HEALTH AND THE ENVIRONMENT, THUS RECALCULATION DURING THE ILCO RISK ASSESSMENT WAS NOT NECESSARY.

THE PRESENCE OF GROUNDWATER CONTAMINATION AT SEVERAL OF THE SUBSITES INDICATES THAT LEACHING OF CONTAMINANTS FROM THE CONTAMINATED SOIL HAS OCCURRED. DUE TO THE CONTAMINANT LEACHING, SOIL REMEDIATION GOALS WERE DEVELOPED TO BE PROTECTIVE OF HUMAN HEALTH THROUGH ALL POTENTIAL PATHWAYS AS WELL AS FOR PROTECTION OF GROUNDWATER. SOIL REMEDIATION GOALS FOR LEAD, ANTIMONY, ARSENIC AND CHROMIUM WERE BASED ON PROTECTION OF HUMAN HEALTH THROUGH A DIRECT PATHWAY. IN ADDITION, THE LEAD SOIL REMEDIATION GOAL OF 300 MG/KG WAS CALCULATED TO ENSURE LEACHABLE LEAD LEVELS FROM THE SOIL WILL NOT RESULT IN GROUNDWATER EXCEEDING THE 0.015 MG/L REMEDIATION GOAL.

REMEDICATION GOALS FOR SURFACE WATER AND AIR ARE BASED ON EXISTING, FEDERALLY REGULATED CRITERIA. THE AMBIENT WATER QUALITY CRITERIA (AWQC) ESTABLISHED BY THE CWA ARE ARARS AND CONSIDERED ACCEPTABLE FOR REMEDIATING THE ILCO SITE. ALTHOUGH AIR MONITORING DURING RI DID NOT INDICATE ELEVATED LEAD LEVELS IN THE AIR, IT IS EXPECTED THAT DURING REMEDIATION DISTURBANCE OF THE SOIL WILL PRODUCE CONTAMINATED DUST PARTICLES IN THE AIR. THEREFORE, AIR LEAD LEVELS WILL BE MONITORED DURING SITE REMEDIATION USING NATIONAL AMBIANT AIR QUALITY STANDARDS (NAAQS).

THE EPA DOES NOT HAVE STANDARDS OR ESTABLISHED GUIDELINES OR CRITERIA FOR ANY HAZARDOUS SUBSTANCE IN SEDIMENT. SEDIMENT REMEDIATION GOALS FOR LEAD AT THE ILCO SITE WERE DEVELOPED BY USING A PUBLISHED LITERATURE REVIEW TO DETERMINE A REMEDIATION GOAL THAT IS PROTECTIVE OF AQUATIC SPECIES AND BELOW HUMAN HEALTH CONCERN LEVELS. BASED ON THIS LITERATURE REVIEW CONCERNING SEDIMENT CLEAN-UP GOALS FOR LEAD IN SIMILAR ENVIRONMENTAL CONDITIONS, A VALUE OF 50 MG/KG WAS SELECTED FOR THE ILCO SITE (SEE APPENDIX C).

THE DETERMINATION FOR A NO ACTION ALTERNATIVE COMES DIRECTLY FROM THE RISK ASSESSMENT. ONCE THE RISK ASSESSMENT IS COMPLETE AND A NO ACTION DETERMINATION IS MADE, THE FEASIBILITY STUDY (FS) DOES NOT THEN EVALUATE OTHER REMEDIATION ALTERNATIVES FOR THAT AREA (OR SUBSITE) THAT WILL REQUIRE NO ACTION.

#DA

#### DESCRIPTIONS OF ALTERNATIVES



THE FEASIBILITY STUDY (FS) REPORT PRESENTS THE RESULTS OF A DETAILED ANALYSIS CONDUCTED ON FIVE POTENTIAL REMEDIAL ACTION ALTERNATIVES FOR ADDRESSING THE SOURCE OF CONTAMINATION AND SIX POTENTIAL REMEDIAL ACTION ALTERNATIVES FOR ADDRESSING GROUNDWATER CONTAMINATION AT THE ILCO SITE. THIS SECTION OF THE ROD PRESENTS A SUMMARY OF EACH OF THE ALTERNATIVES. THE ESTIMATED COST OF EACH ALTERNATIVE IS DIFFERENT FOR EVERY SUBSITE. THE INDIVIDUAL SUBSITE ESTIMATED COSTS ARE MORE SPECIFICALLY PRESENTED IN TABLE 7 ON PAGE 63. THESE COST ESTIMATES ARE ORDER-OF-MAGNITUDE ESTIMATES WITH AN INTENDED ACCURACY RANGE OF +50/-30 PERCENT.

BASED ON INFORMATION OBTAINED DURING THE REMEDIAL INVESTIGATION, AND THE ANALYSIS OF ALL REMEDIAL ALTERNATIVES, EPA HAS CONCLUDED THAT THE SELECTED REMEDY MAY BE ABLE TO ACHIEVE THE REMEDIATION GOAL. GROUNDWATER CONTAMINATION MAY BE ESPECIALLY PERSISTENT IN THE IMMEDIATE VICINITY OF THE CONTAMINANTS' SOURCE. THE ABILITY TO ACHIEVE CLEANUP GOALS AT ALL POINTS THROUGHOUT THE AREA OF ATTAINMENT, OR PLUME, CANNOT BE DETERMINED UNTIL THE EXTRACTION SYSTEM HAS BEEN IMPLEMENTED, MODIFIED AS NECESSARY, AND PLUME RESPONSE MONITORED OVER TIME.

TREATABILITY STUDIES HAVE INDICATED THAT THE SELECTED TREATMENT METHODS WILL TREAT THE WASTE MATERIALS TO LEVELS BELOW LAND DISPOSAL RESTRICTION (LDR) LEVELS FOR LEAD. IF SOME OF THE WASTE MATERIAL OR GROUNDWATER TREATMENT SLUDGE CANNOT BE TREATED TO BELOW LDR LEVELS, SUPERFUND WILL MEET TREATABILITY VARIANCE LEVELS FOR THE CONTAMINATED SOIL AND DEBRIS. THE TREATABILITY VARIANCE LEVEL FOR LEAD IS THE 99-99.9 PERCENT REDUCTION RANGE.

#### SOURCE CONTROL (SC) ALTERNATIVES

##### SOIL AND SEDIMENT

ALTERNATIVE SC-1: NO ACTION: THE SUPERFUND PROGRAM REQUIRES THE NO ACTION ALTERNATIVE BE CONSIDERED AT EVERY SITE {SECTION 300.430 (E) OF THE NCP}. THIS ALTERNATIVE WAS EVALUATED TO SERVE AS A BASELINE FOR COMPARISON WITH OTHER CLEANUP ALTERNATIVES UNDER CONSIDERATION. UNDER THIS OPTION, NO TREATMENT OR CONTAINMENT OF DISPOSAL AREAS WOULD OCCUR AND NO FURTHER EFFORT WOULD BE MADE TO RESTRICT POTENTIAL EXPOSURE TO CONTAMINANTS. ONLY GROUNDWATER MONITORING WOULD BE CONDUCTED.

REMEDIAL ALTERNATIVES	PARKING LOT	GULF STATION	J&L FABRIC.	FLEMINGS PATIO	CONNELL PROPERTY	LEEDS LANDFILL	ACMAR CHURCH
SC-1 \$ MILLION							
TOTAL CAPITAL	0	0	0	0	0	0	0
TOTAL O&M	0.033	0.010	0.015	0.026	0.013	0.008	0.005
PRESENT WORTH							
TOTAL EST.COST	0.033	0.010	0.015	0.026	0.013	0.008	0.005

ALL OF THE REMAINING ALTERNATIVES WOULD REQUIRE INSTITUTIONAL CONTROLS CONSISTING OF ACCESS AND USE RESTRICTIONS TO PROTECT THE INTEGRITY OF THE CAP SYSTEM, AND LONG-TERM GROUNDWATER MONITORING WOULD APPLY. ALSO, TEMPORARY RELOCATION OF RESIDENTS MAY BE NECESSARY AT SUBSITES DURING THE REMEDIAL ACTION ACTIVITIES.

ALTERNATIVE SC-2: MULTILAYER CAP: THIS ALTERNATIVE PROVIDES FOR CONSTRUCTION OF A MULTILAYER COMPACTED CLAY AND GEOMEMBRANE CAP THAT WOULD COVER AREAS THAT HAVE SOIL CONTAMINATED WITH LEAD CONCENTRATIONS EXCEEDING 300 MG/KG. A MULTILAYER CAP WOULD REDUCE THE INFILTRATION OF WATER THROUGH THE FILL AREA TO THE GROUNDWATER, REDUCE SURFACE CONTAMINANT RUNOFF TO THE ADJACENT SURFACE WATER BODY, AND REDUCE THE POTENTIAL FOR DIRECT HUMAN CONTACT TO CONTAMINATED SURFACE SOILS.

THE CAP WOULD BE CONSTRUCTED TO SATISFY RCRA'S MINIMUM TECHNOLOGY GUIDANCE REQUIREMENTS AND WOULD CONSIST OF A 2-FOOT THICK CLAY LAYER WITH A HYDRAULIC CONDUCTIVITY LESS THAN 1 X (10<sup>-7</sup>) CM/S, A 40-MIL FLEXIBLE MEMBRANE LINER, A 1-FOOT DRAINAGE LAYER, AND A 2-FOOT TOPSOIL-FILL COVER LAYER. THE FINAL COVER WOULD BE GRADED TO PROVIDE AN APPROXIMATE 3 TO 5 PERCENT SLOPE AND SURFACE VEGETATION WOULD BE APPLIED TO THE TOPSOIL. EROSION AND SURFACE WATER CONTROLS WOULD BE INCORPORATED INTO THE DESIGN. CAP MAINTENANCE WOULD CONSIST OF MOWING, REGULAR INSPECTIONS, AND CAP REPAIR IF NEEDED. INSTITUTIONAL CONTROLS CONSISTING OF ACCESS AND USE RESTRICTIONS TO PROTECT THE INTEGRITY OF THE CAP SYSTEM, AND LONG-TERM GROUNDWATER MONITORING WOULD APPLY. WARNING SIGNS WOULD BE INSTALLED AROUND THE PERIMETER OF THE CONTAMINATED AREAS. EXISTING MONITOR WELLS WOULD BE SAMPLED ANNUALLY AND ANALYZED FOR THE PRIMARY METALS ASSOCIATED WITH AUTOMOTIVE BATTERIES, AND DEED RESTRICTIONS WOULD BE INSTITUTED FOR A MINIMUM OF 30 YEARS. OPERATION AND MAINTENANCE (O&M) CONSISTING OF GROUNDWATER MONITORING AND CAP MAINTENANCE WOULD BE CONDUCTED FOR A MINIMUM OF 30 YEARS. AS REQUIRED BY THE SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986 (SARA) TO THE COMPREHENSIVE ENVIRONMENTAL RESPONSE COMPENSATION LIABILITY ACT OF 1980 (CERCLA), A 5-YEAR REVIEW OF THE SITE WOULD BE CONDUCTED. AFTER THE DESIGN OF THE MULTILAYER CAP IS COMPLETE IT WOULD TAKE 150 TO 300 DAYS TO CONSTRUCT THE CAP DEPENDING ON THE SUBSITE.

REMEDIAL ALTERNATIVES	PARKING LOT	GULF STATION	J&L FABRIC.	FLEMINGS PATIO	CONNELL PROPERTY	LEEDS LANDFILL	ACMAR CHURCH
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SC-2 \$ MILLION

TOTAL CAPITAL	3.604	0.258	0.842	1.372	0.624	1.485	0.315
TOTAL O&M	0.081	0.052	0.039	0.049	0.035	0.030	0.027

PRESENT WORTH

TOTAL EST. COST	3.69	0.31	0.88	1.42	0.66	1.52	0.34
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ALTERNATIVE SC-3: EXCAVATION AND OFFSITE RCRA LANDFILL DISPOSAL: ALTERNATIVE SC-3 INCLUDES EXCAVATING SOIL WITH LEAD CONCENTRATIONS EXCEEDING 300 MG/KG AND OR REMOVAL OF CONTAMINATED SEDIMENTS (EXCEEDING 50 MG/KG LEAD) BY HYDRAULIC DREDGING, SEDIMENT DEWATERING, AND LOADING AND TRANSPORTING CONTAMINATED SOILS AND SEDIMENTS TO AN OFFSITE RCRA PERMITTED (SUBTITLE C) LANDFILL. THE EXCAVATED MATERIAL WOULD BE CONSIDERED A CHARACTERISTIC HAZARDOUS WASTE AND WOULD HAVE TO BE MANIFESTED TO THE RCRA DISPOSAL FACILITY. THE RCRA DISPOSAL FACILITY WOULD HAVE TO MEET ALL LAND DISPOSAL RESTRICTIONS PRIOR TO DISPOSAL.

DURING EXCAVATION AND REMOVAL ACTIVITIES, DUST WILL BE CONTROLLED WITH A WATER SPRAY MIST TWICE A DAY, AND MORE OFTEN WHEN WIND SPEEDS EXCEED 15 MPH, TO INSURE THAT CONTAMINATED DUST WILL NOT MIGRATE OFFSITE. DOWNWIND AIR MONITORING FOR LEAD AND OTHER METALS WILL BE CONDUCTED DURING AND AFTER REMEDIATION. SAMPLES FROM AT LEAST ONE DOWNWIND LEAD SAMPLER WILL BE COLLECTED DAILY DURING REMEDIATION. AIR MONITORING WILL CONTINUE FOR AT LEAST TWO WEEKS AFTER THE REMEDIATION IS COMPLETE ON A LESS FREQUENT BASIS.

ONCE THE CONTAMINATED MATERIAL HAD BEEN REMOVED, THE AFFECTED AREAS WOULD BE BACKFILLED WITH CLEAN FILL TO THE ORIGINAL ELEVATIONS, GRADED, AND VEGETATED. AFTER THE DESIGN OF THE EXCAVATION OPERATION IS COMPLETE IT WOULD TAKE 120 TO 300 DAYS TO IMPLEMENT THIS REMEDY DEPENDING ON THE SUBSITE. TEMPORARY RELOCATION OF RESIDENTS MAY BE NECESSARY.

REMEDIAL ALTERNATIVES	PARKING LOT	GULF STATION	J&L FABRIC.	FLEMINGS PATIO	CONNELL PROPERTY	LEEDS LANDFILL	ACMAR CHURCH
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SC-3 \$ MILLION

TOTAL CAPITAL	28.23	2.25	6.91	11.93	5.49	0.82	3.94
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TOTAL O&M	0	0	0	0	0	0	0
PRESENT WORTH							
TOTAL EST. COST	28.83	2.25	6.91	11.93	5.49	0.82	3.94

ALTERNATIVE SC-4: EXCAVATION, ONSITE TREATMENT, AND REPLACEMENT ONSITE: THIS ALTERNATIVE CONSISTS OF EXCAVATING SOIL/SEDIMENT WITH LEAD CONCENTRATIONS EXCEEDING 300 MG/KG AND 50 MG/KG, RESPECTIVELY, TREATING THE CONTAMINATED MATERIAL ONSITE THROUGH SOLIDIFICATION AND STABILIZATION, AND REPLACING THE TREATED SOIL BACK INTO THE EXCAVATION IN COMPLIANCE WITH RCRA REQUIREMENTS. A PORTABLE HYDRAULIC DREDGE WOULD REMOVE THE SEDIMENT. SEDIMENT WOULD BE DEWATERED AND TRANSPORTED PRIOR TO TREATMENT WITH THE SOIL.

DURING EXCAVATION AND REMOVAL ACTIVITIES, DUST WILL BE CONTROLLED WITH A WATER SPRAY MIST TWICE A DAY, AND MORE OFTEN WHEN WIND SPEEDS EXCEED 15 MPH, TO INSURE THAT CONTAMINATED DUST WILL NOT MIGRATE OFFSITE. DOWNWIND AIR MONITORING FOR LEAD AND OTHER METALS WILL BE CONDUCTED DURING AND AFTER REMEDIATION. SAMPLES FROM AT LEAST ONE DOWNWIND LEAD SAMPLER WILL BE COLLECTED DAILY DURING REMEDIATION. AIR MONITORING WILL CONTINUE FOR AT LEAST TWO WEEKS AFTER THE REMEDIATION IS COMPLETE ON A LESS FREQUENT BASIS.

A RCRA SUBTITLE D CAP WOULD BE PLACED ON THE TREATED MATERIAL AND WOULD MEET THE STATE REQUIREMENTS FOR CLOSURE. SEDIMENT REMOVAL WOULD ONLY BE DONE AT THE GULF SERVICE STATION. AFTER THE DESIGN OF THE SOLIDIFICATION OPERATION IS COMPLETE IT WOULD TAKE 180 TO 360 DAYS TO IMPLEMENT THIS REMEDY DEPENDING ON THE SUBSITE. THIS ALTERNATIVE WILL COMPLY WITH THE LAND DISPOSAL RESTRICTIONS (LDRS) THROUGH A TREATABILITY VARIANCE FOR THE CONTAMINATED SOIL AND DEBRIS. A TREATABILITY VARIANCE FOR SOLIDIFICATION/STABILIZATION MAY BE NECESSARY. TEMPORARY RELOCATION OF RESIDENTS MAY BE NECESSARY. O&M CONSISTING OF GROUNDWATER MONITORING, INSPECTIONS AND MAINTENANCE WOULD BE CONDUCTED FOR A MINIMUM OF 30 YEARS. AS REQUIRED BY SARA, A 5-YEAR REVIEW WOULD BE CONDUCTED.

REMEDIAL ALTERNATIVES	PARKING LOT	GULF STATION	J&L FABRIC.	FLEMINGS PATIO	CONNELL PROPERTY	LEEDS LANDFILL	ACMAR CHURCH
SC-4 \$ MILLION							
TOTAL CAPITAL	12.65	1.22	2.89	4.63	2.50	0.65	1.85
TOTAL O&M	0.13	0.04	0.05	0.07	0.05	0.03	0.03
PRESENT WORTH							
TOTAL EST. COST	12.78	1.26	2.94	4.70	2.55	0.68	1.88

ALTERNATIVE SC-5: EXCAVATION, CENTRAL LOCATION TREATMENT, AND REPLACEMENT ONSITE: THIS ALTERNATIVE IS THE SAME AS ALTERNATIVE SC-4 EXCEPT THAT THE EXCAVATED MATERIAL WILL BE TAKEN TO A CENTRALLY LOCATED TREATMENT AREA (THE ILCO PARKING LOT). THE EXCAVATED MATERIAL WOULD BE CONSIDERED A CHARACTERISTIC HAZARDOUS WASTE AND WOULD HAVE TO BE MANIFESTED AS A HAZARDOUS WASTE UNTIL IT IS TREATED AND RENDERED NON-HAZARDOUS. IT WOULD BE TREATED AT THE CENTRALLY LOCATED TREATMENT AREA AND THEN EITHER PLACED IN THE PARKING LOT OR RETURNED TO ITS ORIGINAL LOCATION. IF THE TREATED WASTE IS PLACED IN THE ILCO PARKING LOT THEN THE SUBSITE EXCAVATION FROM WHICH THE WASTE ORIGINATED WOULD NOT NEED 5 YEAR REVIEW, SUBTITLE D CLOSURE, OR DEED RESTRICTIONS. INSTEAD, THESE SUBSITE EXCAVATIONS WOULD BE BACKFILLED WITH CLEAN FILL AND REVEGETATED. IF THE SOLID WASTE CANNOT BE PLACED IN THE PARKING LOT DUE TO SPACE LIMITATIONS THE WASTE WOULD BE RETURNED TO ITS ORIGINAL LOCATION OR POSSIBLY PLACED IN THE LEEDS LANDFILL. A RCRA SUBTITLE D CAP WOULD BE PLACED ON THE TREATED MATERIAL AND WOULD MEET THE STATE REQUIREMENTS FOR CLOSURE. AFTER THE DESIGN OF THE SOLIDIFICATION OPERATION IS COMPLETE IT WILL TAKE 150 TO 240 DAYS TO IMPLEMENT THIS REMEDY DEPENDING ON THE SUBSITE. TEMPORARY RELOCATION OF RESIDENTS MAY BE NECESSARY. AIR MONITORING WOULD BE CONDUCTED THE SAME WAY AS DESCRIBED IN ALTERNATIVE SC-4.

O&M, CONSISTING OF GROUNDWATER MONITORING AND MAINTENANCE WOULD BE CONDUCTED FOR A MINIMUM OF 30 YEARS. AS REQUIRED BY SARA, A 5-YEAR REVIEW WOULD BE CONDUCTED.

REMEDIAL ALTERNATIVES	PARKING LOT	GULF STATION	J&L FABRIC.	FLEMINGS PATIO	CONNELL PROPERTY	LEEDS LANDFILL	ACMAR CHURCH
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SC-5 \$ MILLION

TOTAL CAPITAL	12.65	1.19	3.20	5.15	2.66	0.51	1.95
TOTAL O&M	0.13	0.04	0.05	0.07	0.05	0.04	0.03
PRESENT WORTH							

TOTAL EST. COST	12.78	1.23	3.25	5.22	2.71	0.54	1.98
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#### GROUNDWATER CONTROL (GC) ALTERNATIVES

ALTERNATIVE GC-1: NO ACTION: THIS ALTERNATIVE WAS EVALUATED TO SERVE AS A BASELINE FOR COMPARISON WITH THE OTHER ALTERNATIVES UNDER CONSIDERATION. UNDER THIS OPTION, NO ACTIVE MEASURES WOULD BE TAKEN TO ADDRESS OR CONTAIN THE GROUNDWATER CONTAMINATION AT THE SITE. GROUNDWATER USE WOULD NOT BE RESTRICTED. ONLY MONITORING WOULD BE CONDUCTED.

REMEDIAL ALTERNATIVES	PARKING LOT	GULF STATION	J&L FABRIC.	FLEMINGS PATIO	CONNELL PROPERTY	LEEDS LANDFILL	ACMAR CHURCH
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GC-1 \$ MILLION

TOTAL CAPITAL	**	0	0	0	0	0	0
TOTAL O&M	**	0.01	0.015	0.026	0.013	0.008	0.005
PRESENT WORTH							

TOTAL EST. COST	**	0.010	0.015	0.026	0.013	0.008	0.005
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\*\* GROUNDWATER REMEDIATION AT THE ILCO PARKING LOT IS BEING HANDLED UNDER RCRA AND WILL BE ADDRESSED IN OU #2. THEREFORE, NO EVALUATION OF GROUNDWATER ALTERNATIVES WAS DONE.

ALTERNATIVE GC-2: NATURAL ATTENUATION: THIS ALTERNATIVE IS GENERALLY THE SAME AS THE NO ACTION ALTERNATIVE IN THAT NO ACTIVE MEASURES WOULD BE TAKEN TO ADDRESS OR CONTAIN THE GROUNDWATER AT THE SITE. HOWEVER, INSTITUTIONAL CONTROLS WOULD BE IMPLEMENTED TO RESTRICT USAGE OF GROUNDWATER UNTIL REMEDIATION GOALS ARE ATTAINED THROUGH THE ATTENUATION PROCESS. NATURAL ATTENUATION MEANS THAT ANY CONTAMINATION THAT IS CURRENTLY FOUND IN GROUNDWATER WOULD LESSEN WITH TIME NATURALLY WITHOUT ACTIVE MEASURES BEING TAKEN. NATURAL ATTENUATION RELIES ON THE GROUNDWATER'S NATURAL ABILITY TO REDUCE CONTAMINANT CONCENTRATION THROUGH A PHYSICAL PROCESS UNTIL REMEDIATION GOALS ARE MET. BASED ON MODELING AND HYDROGEOLOGIC DATA EPA HAS FOUND THAT LEAD IN THE GROUNDWATER WILL ADHERE TO CLAY PARTICLES FOUND IN THE AQUIFER. WHEN THIS HAPPENS THE LEAD CONCENTRATION IN THE GROUNDWATER IS REDUCED.

BASED ON THE PH OF THE AQUIFER EPA HAS DETERMINED THAT THIS ADSORPTION PROCESS WILL EFFECTIVELY REMOVE CONTAMINANTS FROM THE GROUNDWATER OVER A PERIOD OF TIME. ACCORDING TO THE PREAMBLE OF THE NATIONAL CONTINGENCY PLAN (NCP), NATURAL ATTENUATION MAY BE CONSIDERED ONLY WHEN GROUNDWATER CONTAMINANTS ARE EXPECTED TO BE REDUCED TO THE REMEDIATION GOALS DETERMINED TO BE PROTECTIVE OF HUMAN HEALTH AND SENSITIVE ECOLOGICAL ENVIRONMENTS IN A REASONABLE TIME FRAME. FOLLOWING THE ATTAINMENT OF THE GROUNDWATER REMEDIATION GOALS, GROUNDWATER WOULD CONTINUE TO BE MONITORED FOR A MINIMUM OF 30 YEARS TO VERIFY THE EFFECTIVENESS OF THE REMEDY.

REMEDIAL	PARKING	GULF	J&L	FLEMINGS	CONNELL	LEEDS	ACMAR
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ALTERNATIVES	LOT	STATION	FABRIC.	PATIO	PROPERTY	LANDFILL	CHURCH
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GC-2 \$ MILLION

TOTAL CAPITAL	**	NA	0	0	0	0	NA
TOTAL O&M	**	NA	0.015	0.026	0.013	0.008	NA
PRESENT WORTH							

TOTAL EST. COST	**	NA	0.015	0.026	0.013	0.008	NA
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\*\* GROUNDWATER REMEDIATION AT THE ILCO PARKING LOT IS BEING HANDLED UNDER RCRA AND WILL BE ADDRESSED IN OU #2. THEREFORE, NO EVALUATION OF GROUNDWATER ALTERNATIVES WAS DONE.

NA BECAUSE NO LEAD OR OTHER CONTAMINANTS OF CONCERN WERE FOUND ABOVE THE REMEDIATION GOAL AT THE GULF STATION OR THE ACMAR CHURCH OF GOD, NO GROUNDWATER ALTERNATIVES WERE EVALUATED FOR THESE SUBSITES.

ALTERNATIVE GC-3: MULTILAYER CAP AND SLURRY WALL: THIS ALTERNATIVE WOULD HAVE TO BE IMPLEMENTED IN CONJUNCTION WITH SC-2. GC-3 INCLUDES THE INSTALLATION OF A SLURRY WALL AROUND THE CONTAMINATED AREA TO CONTAIN CONTAMINATED GROUNDWATER. A CAP OVER THE AREA MINIMIZES THE INFILTRATION OF RAINFALL WITHIN THE INNER BOUNDARY OF THE SLURRY WALL. THE SLURRY WALL IS CONSTRUCTED BY EXCAVATING A NARROW VERTICAL TRENCH, TYPICALLY 2 TO 6 FEET WIDE, AND BACK FILLING THE TRENCH WITH A THIN MIXTURE OF LIQUID, THAT CONTAINS WATER, AND OTHER SUBSTANCES SUCH AS CEMENT OR CLAY. THE AVERAGE DEPTH OF THE WALL WOULD BE 30 FEET. THIS REMEDY WOULD TAKE 240 TO 390 DAYS TO CONSTRUCT DEPENDING ON THE SUBSITE. O&M CONSISTING OF GROUNDWATER MONITORING AND MAINTENANCE OF THE CAP WOULD BE CONDUCTED FOR A MINIMUM OF 30 YEARS. AS REQUIRED BY SARA A 5-YEAR REVIEW WOULD BE CONDUCTED.

REMEDIAL	PARKING	GULF	J&L	FLEMINGS	CONNELL	LEEDS	ACMAR
ALTERNATIVES	LOT	STATION	FABRIC.	PATIO	PROPERTY	LANDFILL	CHURCH

GC-3 \$ MILLION

TOTAL CAPITAL	**	NA	1.46	3.38	1.22	2.93	NA
TOTAL O&M	**	NA	0.04	0.05	0.04	0.03	NA
PRESENT WORTH							

TOTAL EST. COST	**	NA	1.50	3.43	1.26	2.96	NA
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\*\* GROUNDWATER REMEDIATION AT THE ILCO PARKING LOT IS BEING HANDLED UNDER RCRA AND WILL BE ADDRESSED IN OU #2. THEREFORE, NO EVALUATION OF GROUNDWATER ALTERNATIVES WAS DONE.

NA BECAUSE NO LEAD OR OTHER CONTAMINANTS OF CONCERN WERE FOUND ABOVE THE REMEDIATION GOAL AT THE GULF STATION OR THE ACMAR CHURCH OF GOD, NO GROUNDWATER ALTERNATIVES WERE EVALUATED FOR THESE SUBSITES.

ALTERNATIVE GC-4: EXTRACTION AND DISCHARGE TO ILCO: THIS ALTERNATIVE CONSISTS OF PUMPING CONTAMINATED GROUNDWATER THAT EXCEEDS 15 UG/L FROM EXTRACTION WELLS, COLLECTING AND STORING THE CONTAMINATED GROUNDWATER IN A TEMPORARY STORAGE TANK, AND TRANSPORTING THE CONTAMINATED GROUNDWATER IN VACUUM TRUCKS TO THE ILCO MAIN FACILITY PLANT FOR TREATMENT IN THE RCRA-CORRECTIVE-ACTION GROUNDWATER TREATMENT SYSTEM WHICH IS CURRENTLY IN COMPLIANCE WITH RCRA. IT WOULD TAKE 60 DAYS TO CONSTRUCT THIS REMEDY. EXTRACTION WOULD TAKE ANYWHERE FROM 3 TO 20 YEARS DEPENDING ON THE SUBSITE. O&M CONSISTING OF GROUNDWATER MONITORING WOULD BE CONDUCTED FOR A MINIMUM OF 30 YEARS. EXTRACTION MONITORING AND TRANSPORTATION OF GROUNDWATER TO ILCO WOULD BE

CONDUCTED AS LONG AS THE GROUNDWATER LEVEL WERE ABOVE THE 15 UG/L ACTION LEVEL FOR LEAD. AS REQUIRED BY SARA A 5-YEAR REVIEW WOULD BE CONDUCTED.

REMEDIAL	PARKING	GULF	J&L	FLEMINGS	CONNELL	LEEDS	ACMAR
ALTERNATIVES	LOT	STATION	FABRIC.	PATIO	PROPERTY	LANDFILL	CHURCH

GC-4 \$ MILLION

TOTAL CAPITAL	**	NA	2.42	4.80	3.09	8.75	NA
TOTAL O&M	**	NA	0.17	0.16	0.16	0.16	NA
PRESENT WORTH							

TOTAL EST. COST	**	NA	2.59	4.96	3.25	8.91	NA
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\*\* GROUNDWATER REMEDIATION AT THE ILCO PARKING LOT IS BEING HANDLED UNDER RCRA AND WILL BE ADDRESSED IN OU #2. THEREFORE, NO EVALUATION OF GROUNDWATER ALTERNATIVES WAS DONE.

NA BECAUSE NO LEAD OR OTHER CONTAMINANTS OF CONCERN WERE FOUND ABOVE THE REMEDIATION GOAL AT THE GULF STATION OR THE ACMAR CHURCH OF GOD, NO GROUNDWATER ALTERNATIVES WERE EVALUATED FOR THESE SUBSITES.

ALTERNATIVE GC-5: EXTRACTION, CHEMICAL/PHYSICAL TREATMENT, AND DISCHARGE TO ILCO: CONTAMINATED GROUNDWATER WOULD BE PUMPED FROM EXTRACTION WELLS, COLLECTED AND STORED IN A TEMPORARY STORAGE TANK, TREATED ONSITE WITH A MOBILE CHEMICAL/PHYSICAL TREATMENT UNIT, AND THEN TRANSPORTED TO THE ILCO MAIN FACILITY'S PERMITTED (NPDES) POINT-SOURCE-DISCHARGE-SURFACE OUTFALL IN VACUUM TRUCKS. THERE WOULD ALSO BE GROUNDWATER MONITORING ONGOING. SLUDGES GENERATED FROM THE PUMP AND TREAT SYSTEM WILL BE TESTED FOR DETERMINATION AS TO WHETHER THEY ARE RCRA HAZARDOUS WASTE. IF SO, THESE SLUDGES WILL BE SOLIDIFIED IN ORDER TO MEET THE LAND DISPOSAL RESTRICTIONS TREATABILITY VARIANCE LEVELS AND TO BE RENDERED NON-HAZARDOUS BEFORE DISPOSAL IN A SUBTITLE D UNIT. CONSTRUCTION OF THIS ALTERNATIVE WOULD TAKE APPROXIMATELY 90 DAYS. EXTRACTION WOULD TAKE ANYWHERE FROM 3 TO 20 YEARS DEPENDING ON THE SUBSITE. O&M CONSISTING OF GROUNDWATER MONITORING WOULD BE CONDUCTED FOR A MINIMUM OF 30 YEARS. EXTRACTION AND TREATMENT MONITORING AND TRANSPORTATION OF THE GROUNDWATER TO ILCO WOULD CONTINUE AS LONG AS THE GROUNDWATER CONTAINED LEVELS OF LEAD ABOVE THE 15 UG/L ACTION LEVEL FOR LEAD. AS REQUIRED BY SARA A 5-YEAR REVIEW WOULD BE CONDUCTED.

REMEDIAL	PARKING	GULF	J&L	FLEMINGS	CONNELL	LEEDS	ACMAR
ALTERNATIVES	LOT	STATION	FABRIC.	PATIO	PROPERTY	LANDFILL	CHURCH

GC-5 \$ MILLION

TOTAL CAPITAL	**	NA	2.43	4.82	3.11	8.70	NA
TOTAL O&M	**	NA	0.54	0.54	0.53	0.53	NA
PRESENT WORTH							

TOTAL EST. COST	**	NA	2.97	5.36	3.64	9.23	NA
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\*\* GROUNDWATER REMEDIATION AT THE ILCO PARKING LOT IS BEING HANDLED UNDER RCRA AND WILL BE ADDRESSED IN OU #2. THEREFORE, NO EVALUATION OF GROUNDWATER ALTERNATIVES WAS DONE.

NA BECAUSE NO LEAD OR OTHER CONTAMINANTS OF CONCERN WERE FOUND ABOVE THE REMEDIATION GOAL AT THE GULF STATION OR THE ACMAR CHURCH OF GOD, NO GROUNDWATER ALTERNATIVES WERE EVALUATED FOR THESE SUBSITES.

ALTERNATIVE GC-6: EXTRACTION, CHEMICAL/PHYSICAL TREATMENT, AND DISCHARGE TO THE SURFACE OUTFALL: THIS ALTERNATIVE IS THE SAME AS THE PRECEDING ALTERNATIVE, EXCEPT THAT THE PREVIOUS ALTERNATIVE INCLUDES DISCHARGE AT THE ILCO MAIN FACILITY AND THIS ALTERNATIVE INCLUDES SURFACE OUTFALL DISCHARGE ONSITE. UNDER THIS ALTERNATIVE, CONTAMINATED GROUNDWATER WOULD BE PUMPED FROM EXTRACTION WELLS, COLLECTED, AND STORED IN A TEMPORARY STORAGE TANK, TREATED ONSITE WITH A CHEMICAL/PHYSICAL TREATMENT UNIT, AND THEN DISCHARGED ONSITE INTO AN ADJACENT CREEK. SURFACE WATER DISCHARGE MUST COMPLY WITH NPDES REQUIREMENTS. IT IS ESTIMATED THE CONSTRUCTION OF THIS ALTERNATIVE WOULD TAKE 120 DAYS. EXTRACTION WOULD TAKE ANYWHERE FROM 3 TO 20 YEARS DEPENDING ON THE SUBSITE. O&M, CONSISTING OF GROUNDWATER MONITORING WOULD BE CONDUCTED FOR A MINIMUM OF 30 YEARS. EXTRACTION AND TREATMENT MONITORING WOULD CONTINUE AS LONG AS GROUNDWATER CONTAINED LEVELS OF LEAD EXCEEDING THE 15 UG/L ACTION LEVEL FOR LEAD. AS REQUIRED BY SARA, A 5-YEAR REVIEW WOULD BE CONDUCTED.

REMEDIAL ALTERNATIVES	PARKING LOT	GULF STATION	J&L FABRIC.	FLEMINGS PATIO	CONNELL PROPERTY	LEEDS LANDFILL	ACMAR CHURCH
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GC-6 \$ MILLION

TOTAL CAPITAL	**	NA	0.55	0.55	0.55	0.55	NA
TOTAL O&M	**	NA	0.06	0.09	0.06	0.22	NA
PRESENT WORTH							

TOTAL EST. COST	**	NA	0.61	0.64	0.61	0.77	NA
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\*\* GROUNDWATER REMEDIATION AT THE ILCO PARKING LOT IS BEING HANDLED UNDER RCRA AND WILL BE ADDRESSED IN OU #2. THEREFORE, NO EVALUATION OF GROUNDWATER ALTERNATIVES WAS DONE.

NA BECAUSE NO LEAD OR OTHER CONTAMINANTS OF CONCERN WERE FOUND ABOVE THE REMEDIATION GOAL AT THE GULF STATION OR THE ACMAR CHURCH OF GOD, NO GROUNDWATER ALTERNATIVES WERE EVALUATED FOR THESE SUBSITES.

## #SCAA

### SUMMARY OF THE COMPARATIVE ANALYSIS OF ALTERNATIVES

THIS SECTION OF THE ROD PROVIDES THE BASIS FOR DETERMINING WHICH ALTERNATIVE PROVIDES THE BEST BALANCE WITH RESPECT TO THE STATUTORY BALANCING CRITERIA SECTION 121 OF CERCLA AND SECTION 300.430 OF THE NCP. THE EPA HAS ESTABLISHED NINE CRITERIA THAT ARE USED TO EVALUATE POTENTIALLY FEASIBLE ALTERNATIVES FOR REMEDIATING SUPERFUND SITES (SEE TABLE 6). EACH ALTERNATIVE IS REVIEWED TO DETERMINE IF THAT ALTERNATIVE MEETS EACH OF THE NINE CRITERIA. THE FOLLOWING ANALYSIS IS A SUMMARY OF THE EVALUATION OF ALTERNATIVES FOR REMEDIATING THE INTERSTATE LEAD COMPANY SUPERFUND SITE UNDER EACH OF THE CRITERIA. THE DETERMINATION FOR A NO ACTION ALTERNATIVE COMES DIRECTLY FROM THE RISK ASSESSMENT. ONCE THE RISK ASSESSMENT IS COMPLETE AND A NO ACTION DETERMINATION IS MADE, THE FEASIBILITY STUDY (FS) DOES NOT THEN EVALUATE OTHER REMEDIATION ALTERNATIVES FOR THAT AREA (OR SUBSITE) THAT WILL REQUIRE NO ACTION. THE NO ACTION ALTERNATIVE IS PROPOSED FOR GROUNDWATER AT THE ACMAR CHURCH OF GOD AND THE GULF STATION BECAUSE NO GROUNDWATER CONTAMINATION WAS FOUND THERE.

THE NCP CATEGORIZES THE NINE CRITERIA INTO THREE GROUPS: (1) THRESHOLD CRITERIA - OVERALL PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT AND COMPLIANCE WITH ARARS (OR INVOKING A WAIVER) ARE THRESHOLD CRITERIA THAT MUST BE SATISFIED IN ORDER FOR AN ALTERNATIVE TO BE ELIGIBLE FOR SELECTION; (2) PRIMARY BALANCING CRITERIA - LONG-TERM EFFECTIVENESS AND PERMANENCE; REDUCTION OF TOXICITY, MOBILITY, OR VOLUME; SHORT-TERM EFFECTIVENESS; IMPLEMENTABILITY, AND COST ARE PRIMARY BALANCING FACTORS USED TO WEIGH MAJOR TRADE-OFFS AMONG ALTERNATIVE HAZARDOUS WASTE MANAGEMENT STRATEGIES; AND (3) MODIFYING CRITERIA - STATE AND COMMUNITY ACCEPTANCE ARE MODIFYING

CRITERIA THAT ARE FORMALLY TAKEN INTO ACCOUNT AFTER PUBLIC COMMENT IS RECEIVED ON THE PROPOSED PLAN AND INCORPORATED IN THE ROD.



**TABLE 6**

**CRITERIA FOR EVALUATING CLEANUP ALTERNATIVES**

- 1) OVERALL PROTECTION OF PUBLIC HEALTH AND ENVIRONMENT: DEGREE TO WHICH EACH ALTERNATIVE ELIMINATES, REDUCES, OR CONTROLS THREATS TO HEALTH AND ENVIRONMENT THROUGH TREATMENT, ENGINEERING METHODS, OR INSTITUTIONAL CONTROLS (E.G. DEED, LAND USE OR OTHER RESTRICTIONS).
- 2) COMPLIANCE WITH STATE AND FEDERAL REQUIREMENTS: DEGREE TO WHICH EACH ALTERNATIVE MEETS ENVIRONMENTAL REGULATIONS DETERMINED TO BE APPLICABLE OR RELEVANT AND APPROPRIATE TO SITE CONDITIONS.
- 3) SHORT TERM EFFECTIVENESS: LENGTH OF TIME NEEDED TO IMPLEMENT EACH ALTERNATIVE AND RISKS POSED TO WORKERS AND NEARBY RESIDENTS DURING IMPLEMENTATION.
- 4) LONG TERM EFFECTIVENESS: ABILITY TO MAINTAIN RELIABLE PROTECTION AFTER IMPLEMENTATION.
- 5) REDUCTION OF MOBILITY, TOXICITY, AND VOLUME: DEGREE TO WHICH ALTERNATIVE REDUCES (1) ABILITY OF CONTAMINANTS TO MOVE THROUGH THE ENVIRONMENT, (2) HARMFUL NATURE OF CONTAMINANTS, AND (3) AMOUNT OF CONTAMINATION.
- 6) IMPLEMENTABILITY: TECHNICAL FEASIBILITY (DIFFICULTY OF CONSTRUCTING, OPERATING OR MAINTAINING), AND ADMINISTRATIVE EASE (E.G. AMOUNT OF COORDINATION WITH OTHER GOVERNMENT AGENCIES OR RELOCATION OF RESIDENTS) OF IMPLEMENTING REMEDY, INCLUDING AVAILABILITY OF GOODS OR SERVICES.
- 7) COST: BENEFITS OF ALTERNATIVE WEIGHED AGAINST COST.
- 8) STATE ACCEPTANCE: EPA REQUESTS STATE COMMENTS AND CONCURRENCE FOR CONSIDERATION IN FINAL REMEDY SELECTION.
- 9) COMMUNITY ACCEPTANCE: EPA HOLDS PUBLIC COMMENT PERIOD TO GET INPUT FROM AFFECTED COMMUNITY AND CONSIDERS AND RESPONDS TO ALL COMMENTS RECEIVED PRIOR TO THE FINAL SELECTION OF A REMEDIAL (LONG TERM CLEANUP) ACTION.

THE SELECTED ALTERNATIVE MUST MEET THE THRESHOLD CRITERIA AND COMPLY WITH ALL ARARS OR BE GRANTED A WAIVER FOR COMPLIANCE WITH ARARS. ANY ALTERNATIVE THAT DOES NOT SATISFY BOTH OF THESE REQUIREMENTS IS NOT ELIGIBLE FOR SELECTION. THE PRIMARY BALANCING CRITERIA ARE THE TECHNICAL CRITERIA UPON WHICH THE DETAILED ANALYSIS IS PRIMARILY BASED. THE FINAL TWO CRITERIA, KNOWN AS MODIFYING CRITERIA, ASSESS THE PUBLIC'S AND THE STATE AGENCY'S ACCEPTANCE OF THE ALTERNATIVE. BASED ON THESE FINAL TWO CRITERIA, EPA MAY MODIFY ASPECTS OF THE SPECIFIC ALTERNATIVE.

THE FOLLOWING ANALYSIS IS A SUMMARY OF THE EVALUATION OF ALTERNATIVES FOR REMEDIATING THE ILCO SUPERFUND SITE UNDER EACH OF THE CRITERIA. A COMPARISON IS MADE BETWEEN EACH OF THE ALTERNATIVES FOR ACHIEVEMENT OF A SPECIFIC CRITERION.

#### THRESHOLD CRITERIA

##### OVERALL PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT

##### SOURCE CONTROL ALTERNATIVES

ALL OF THE ALTERNATIVES, WITH THE EXCEPTION OF THE "NO ACTION" ALTERNATIVE, WOULD PROVIDE PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT BY MINIMIZING OR CONTROLLING THE RISK ASSOCIATED WITH THE CONTAMINATED SOILS THROUGH TREATMENT OR CONTAINMENT AND INSTITUTIONAL CONTROLS. SINCE THE NO ACTION ALTERNATIVE FOR SOURCE CONTROL DOES NOT MEET THE CRITERIA OF OVERALL PROTECTION, IT WILL NOT BE DISCUSSED FURTHER IN THE SOURCE CONTROL EVALUATION. ALTERNATIVE SC-2 WOULD PROTECT AGAINST DIRECT EXPOSURE TO THE CONTAMINATED SOILS. THE ALTERNATIVES INVOLVING EXCAVATION WOULD MINIMIZE RISK BY REMOVING AND TREATING THE PRINCIPAL SOURCE OF THE SOIL AND POSSIBLE GROUNDWATER CONTAMINATION AND USE OF INSTITUTIONAL CONTROLS WHERE NECESSARY. PRECAUTIONS WOULD NEED TO BE TAKEN TO PROTECT THE PUBLIC & ENVIRONMENT DURING TRANSPORTATION OF HAZARDOUS MATERIALS WHEN IMPLEMENTING ALTERNATIVE SC-5.

##### GROUNDWATER CONTROL ALTERNATIVES

ALL OF THE ALTERNATIVES EXCEPT THE NO ACTION ALTERNATIVE WOULD PROVIDE PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT BY MINIMIZING OR CONTROLLING THE RISK ASSOCIATED WITH ANY CONTAMINATED GROUNDWATER THROUGH INSTITUTIONAL CONTROLS, CONTAINMENT OR TREATMENT. FOR THOSE SUBSITES WITH GROUNDWATER CONTAMINATION THE NO ACTION ALTERNATIVE WOULD NOT RESTRICT USAGE OF THE CONTAMINATED GROUNDWATER. THE NATURAL ATTENUATION (GC-2) ALTERNATIVE WOULD ONLY PROVIDE PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT IF SOURCE REMOVAL IS IMPLEMENTED CONCURRENTLY. GC-2 RELIES ON INSTITUTIONAL CONTROLS FOR PROTECTION UNTIL CONTAMINANT LEVELS ARE ACHIEVED. GC-3 WOULD BE PROTECTIVE BY CONTAINING CONTAMINATED GROUNDWATER. GC-4 THROUGH GC-6 WOULD PROVIDE PROTECTION BY REMOVING AND TREATING THE CONTAMINATED GROUNDWATER.

##### COMPLIANCE WITH ARARS

##### SOURCE CONTROL ALTERNATIVES

ALL OF THE REMAINING ALTERNATIVES WOULD COMPLY WITH APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS (ARARS). COMPLIANCE WITH ACTION-SPECIFIC ARARS WOULD OCCUR IN ALL OF THE ALTERNATIVES EXCEPT FOR NO ACTION BY MEETING RCRA CLOSURE, STORAGE, AND TRANSPORTATION CRITERIA IN THE RCRA REGULATION AND BY COMPLYING WITH NATIONAL AMBIENT AIR QUALITY STANDARD (NAAQS) FOR LEAD AND PARTICULATE MATTER AS DEFINED IN 40 CFR 50.12.

BASED ON TREATABILITY STUDIES THE SELECTED TREATMENT IS EXPECTED TO TREAT THE WASTE MATERIAL TO LEVELS BELOW LAND DISPOSAL RESTRICTION (LDR) LEVELS FOR LEAD. IF SOME OF THE MATERIAL CANNOT BE TREATED TO BELOW LDR LEVELS SUPERFUND WILL MEET TREATABILITY VARIANCE LEVELS FOR LEAD. THE TREATABILITY VARIANCE LEVEL FOR LEAD IS THE 99-99.9 PERCENT REDUCTION RANGE.

## GROUNDWATER CONTROL ALTERNATIVES

ALTERNATIVE GC-2 (NATURAL ATTENUATION) WOULD COMPLY WITH CHEMICAL-SPECIFIC ARARS AS A RESULT OF NATURAL DISSIPATION. DURING THE TIME PERIOD REQUIRED TO ATTAIN THE REMEDIATION GOALS, GC-2 REQUIRES RESTRICTION OF GROUNDWATER USAGE. COMPLIANCE WITH CHEMICAL-SPECIFIC ARARS WOULD ACTIVELY OCCUR USING ALTERNATIVES, GC-4, GC-5, AND GC-6 BY MEETING THE MAXIMUM CONTAMINANT LEVELS (MCLS) ESTABLISHED IN 40 CFR 141.61 FOR FINAL CLEAN UP LEVELS FOR AQUIFER RESTORATION. SURFACE WATER DISCHARGES WOULD COMPLY WITH NPDES REQUIREMENTS.

IF THE GROUNDWATER TREATMENT SLUDGE CANNOT BE TREATED TO BELOW LDR LEVELS, SUPERFUND WILL MEET TREATABILITY VARIANCE LEVELS FOR LEAD. THE TREATABILITY VARIANCE LEVEL FOR LEAD IS THE 99-99.9 PERCENT REDUCTION RANGE.

## PRIMARY BALANCING CRITERIA

REDUCTION OF TOXICITY, MOBILITY OR VOLUME THROUGH TREATMENT

## SOURCE CONTROL ALTERNATIVES

ALTERNATIVE SC-2 (CAP) WOULD NOT INCLUDE ANY PROVISION TO REDUCE MOBILITY, TOXICITY OR VOLUME. ALTERNATIVE SC-3 (DISPOSAL) WOULD REDUCE MOBILITY ONCE THE WASTE HAD BEEN TREATED AT THE DISPOSAL FACILITY PRIOR TO DISPOSAL. IN ALTERNATIVES SC-4 AND SC-5 CONTAMINATED SOIL, SEDIMENTS AND/OR BATTERY CASINGS WOULD BE SOLIDIFIED/STABILIZED USING A MIX OF OTHER MATERIALS. SOLIDIFICATION DOES NOT REDUCE THE TOXICITY OF THE CONTAMINANTS, BUT IT DOES GREATLY REDUCE THEIR MOBILITY. BECAUSE MATERIALS SUCH AS CEMENT AND OTHER ADDITIVES ARE ADDED TO THE WASTE MATERIAL, IN THE TREATMENT PROCESS, THE VOLUME OF THE SOIL AND WASTE MATERIAL INCREASES.

## GROUNDWATER CONTROL ALTERNATIVES

GC-2 (NATURAL ATTENUATION) AND GC-3 (CAP AND SLURRY WALL) ALTERNATIVES WOULD NOT INCLUDE A PROVISION TO REDUCE TOXICITY OR VOLUME. GC-2 WOULD REDUCE THE MOBILITY OF THE CONTAMINANTS THROUGH THE NATURAL ATTENUATION PROCESS AND GC-3 WOULD REDUCE MOBILITY BY PREVENTING THE CONTAMINATED GROUNDWATER FROM MIGRATING OFFSITE. THE ALTERNATIVES THAT CALL FOR GROUNDWATER TREATMENT (GC-4, GC-5 AND GC-6) WOULD ALL REDUCE THE VOLUME AND TOXICITY OF THE GROUNDWATER CONTAMINANTS BY EXTRACTION AND CHEMICAL AND PHYSICAL TREATMENT.

## SHORT-TERM EFFECTIVENESS

## SOURCE CONTROL ALTERNATIVES

SC-2 (CONTAINMENT) AVOIDS SHORT-TERM IMPACTS AND UNCERTAINTIES ASSOCIATED WITH EXCAVATION. ALL OF THE ALTERNATIVES WOULD REQUIRE VARYING AMOUNTS OF TIME TO IMPLEMENT. THE HEALTH RISKS TO REMEDIAL WORKERS IS UNLIKELY, PARTICULARLY WHEN APPROPRIATE MONITORING AND ENGINEERING CONTROLS ARE APPLIED. IN ALTERNATIVE SC-5 MEASURES MUST BE TAKEN TO PROTECT THE COMMUNITY DURING TRANSPORT OF THE CONTAMINATED MATERIALS.

## GROUNDWATER CONTROL ALTERNATIVES

ALL OF THE REMAINING ALTERNATIVES WOULD REQUIRE VARYING AMOUNTS OF TIME TO IMPLEMENT. THE GROUNDWATER WOULD BE REMEDIATED USING ALTERNATIVE GC-2 ONLY AFTER IT NATURALLY ATTENUATES. GC-3, GC-4, GC-5 AND GC-6 WOULD PREVENT OR LIMIT MIGRATION OF GROUNDWATER CONTAMINATION IMMEDIATELY AFTER IMPLEMENTATION.

## LONG-TERM EFFECTIVENESS

## SOURCE CONTROL ALTERNATIVES

EACH OF THE REMAINING ALTERNATIVES WOULD PROVIDE LONG-TERM EFFECTIVENESS THROUGH LIMITING THE MIGRATION OF CONTAMINATION OR TREATMENT OF THE CONTAMINATED SOILS AT THE SITE. AS LONG AS A CAP IS INSTALLED AND MAINTAINED PROPERLY ALTERNATIVE SC-2 WOULD BE EFFECTIVE. ACCORDING TO THE NCP, EPA EXPECTS TO USE ENGINEERING CONTROLS, SUCH AS CONTAINMENT, (CAPPING - SC-2) FOR WASTE THAT POSES A RELATIVELY LOW LONG-TERM THREAT OR WHERE TREATMENT IS IMPRACTICABLE FOR LONG TERM EFFECTIVENESS. ALTERNATIVE GC-3 PROVIDES FOR THE REMOVAL OF CONTAMINANTS FROM THE SITE AND TREATMENT AT THE DISPOSAL FACILITY, THUS GREATLY REDUCING THE LONG-TERM HUMAN-HEALTH AND ENVIRONMENTAL RISKS AT THE SITE. IN THE REMAINING ALTERNATIVES THE CONTAMINATED MATERIALS WOULD BE SOLIDIFIED. EXCAVATION AND SOLIDIFICATION ARE PROVEN TECHNOLOGIES, BUT WOULD REQUIRE INCREASED OPERATION AND MAINTENANCE.

## GROUNDWATER CONTROL ALTERNATIVES

THE GC-2 ALTERNATIVE ALONE WOULD NOT PROVIDE LONG-TERM EFFECTIVENESS. WITHOUT ADDRESSING THE SOURCE, CONTAMINATION COULD CONTINUE TO MIGRATE THROUGH SUBSURFACE SOIL TO THE GROUNDWATER AND THE GROUNDWATER CONTAMINATION WOULD NOT BE REDUCED OVER TIME. IF ALTERNATIVE GC-2 IS IMPLEMENTED IN CONJUNCTION WITH SOURCE REMOVAL THEN THE NATURAL ATTENUATION PROCESS WOULD PROVIDE LONG TERM EFFECTIVENESS. ONCE THE SOURCE IS REMOVED AND THE CONTAMINATION ATTENUATES TO THE SOIL PARTICLES THE AREA WOULD BE REMEDIATED. GC-3 (CONTAINMENT FROM CAP AND SLURRY WALL) FOR WASTES THAT POSE A RELATIVELY LOW LONG-TERM THREAT OR WHERE TREATMENT IS IMPRACTICABLE (LEEDS MUNICIPAL LANDFILL) MEETS THE NCP EXPECTATIONS AND MUNICIPAL LANDFILL GUIDANCE. INSTALLATION OF A MULTILAYER CAP WOULD REDUCE THE POTENTIAL FOR INCREASED GROUNDWATER CONTAMINATION. THE SLURRY WALL WOULD CONTAIN THE CONTAMINATED GROUNDWATER PREVENTING IT FROM MIGRATING BUT THE CONTAMINATED GROUNDWATER WOULD REMAIN A POTENTIAL EXPOSURE POINT. THE REMAINING ALTERNATIVES (GC-4, GC-5, AND GC-6) PROVIDE A HIGH DEGREE OF LONG-TERM EFFECTIVENESS AND PERMANENCE BY REMOVAL AND TREATMENT OF GROUNDWATER TO RESTORE IT TO DRINKING WATER STANDARDS.

## IMPLEMENTABILITY

### SOURCE CONTROL ALTERNATIVES

ALL OF THE ALTERNATIVES EVALUATED ARE IMPLEMENTABLE. QUALITY CONTROL DURING CONSTRUCTION OF THE CAP IN ALTERNATIVE SC-2 IS IMPORTANT TO MAXIMIZE THE EFFECTIVENESS OF THE SYSTEM IN REDUCING INFILTRATION. TREATMENT OF HETEROGENEOUS WASTE (SUCH AS MUNICIPAL LANDFILL WASTE) IS OFTEN DIFFICULT OR INFEASIBLE, REDUCING IMPLEMENTABILITY. THE REMAINING ALTERNATIVES ARE TECHNICALLY FEASIBLE AND IMPLEMENTABLE. HOWEVER, DIFFICULTIES MAY ARISE AS A RESULT OF PROBLEMS WITH UNKNOWN SUBSURFACE CONDITIONS, MATERIALS HANDLING, TRANSPORTATION AND DISPOSAL OR REPLACEMENT OF FILL.

### GROUNDWATER CONTROL ALTERNATIVES

ALL OF THE ALTERNATIVES EVALUATED ARE IMPLEMENTABLE. QUALITY CONTROL DURING CONSTRUCTION OF THE CAP AND SLURRY WALL IN ALTERNATIVE GC-3 IS IMPORTANT TO MAXIMIZE THE EFFECTIVENESS OF THE SYSTEM IN REDUCING INFILTRATION. THE GC-4 AND GC-5 ALTERNATIVES ARE IMPLEMENTABLE, HOWEVER, DIFFICULTIES MAY ARISE WITH TRANSPORTATION OF THE CONTAMINATED GROUNDWATER FOLLOWING EXTRACTION.

## COST

ALL OF THE ESTIMATED COSTS ARE FOR CONSTRUCTION AND OPERATION AND MAINTENANCE (O&M) OF EACH ALTERNATIVE. A FACTOR IS APPLIED TO O&M COSTS TO MAKE THEM EQUIVALENT TO CURRENT CONSTRUCTION COSTS. THIS IS KNOWN AS A PRESENT WORTH COST. IN THIS WAY THE TOTAL LIFE CYCLE COST OF AN

ALTERNATIVE CAN BE CALCULATED AND COMPARED BY ADDING THE CONSTRUCTION AND O&M PRESENT WORTH COSTS. THESE COST ESTIMATES ARE ORDER-OF-MAGNITUDE ESTIMATES WITH AN INTENDED ACCURACY RANGE OF +50/-30 PERCENT. AS SHOWN ON THE TABLE 7, THE COST ESTIMATE FOR SC-4 AND SC-5 IS SUBSTANTIALLY LESS THAN SC-3. THEY ALSO PROVIDE A GREATER LEVEL OF PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT. GC-3, GC-4 AND GC-5 ARE SUBSTANTIALLY HIGHER THAN THE REMAINING GROUNDWATER ALTERNATIVES, WITH GC-5 COSTING THE MOST. THE ONLY ESTIMATED COSTS ASSOCIATED WITH GC-1 AND GC-2 IS GROUNDWATER MONITORING AND OPERATION AND MAINTENANCE.

#### MODIFYING CRITERIA

#### STATE ACCEPTANCE

THE STATE OF ALABAMA HAS REVIEWED EPA'S PROPOSED PLAN AND HAVE CONCURRED WITH EPA ON THE ALTERNATIVES PROPOSED FOR SITE REMEDIATION. THE CONCURRENCE LETTER CAN BE FOUND IN APPENDIX D.

#### COMMUNITY ACCEPTANCE

THE PUBLIC WAS CONCERNED ABOUT PROTECTION OF THE RESIDENTS AND WORKERS IN THE LEEDS AREA DURING EXCAVATION. BASED ON COMMENTS RECEIVED AT THE PUBLIC MEETING AS WELL AS DURING THE PUBLIC COMMENT PERIOD, THE PUBLIC SUPPORTS THE REMEDIATION OF THE SITE AND DOES NOT OPPOSE THE SELECTED REMEDY.

#### #SA

#### EPA'S SELECTED ALTERNATIVE

#### SELECTED SOURCE ALTERNATIVES

THE SELECTED ALTERNATIVE FOR CLEANUP OF THE SOURCE OF CONTAMINATION AT THE ILCO PARKING LOT AND FLEMING'S PATIO IS ALTERNATIVE SC-4, EXCAVATION, ONSITE SOLIDIFICATION AND REPLACEMENT ONSITE. THE ESTIMATED COST FOR THIS SOURCE ALTERNATIVE FOR THE ILCO PARKING LOT IS \$12,780,000 AND THE ESTIMATED COST FOR THIS SOURCE ALTERNATIVE FOR FLEMING'S PATIO IS \$4,700,000. THE TOTAL ESTIMATED COST FOR THIS ALTERNATIVE IS \$17,480,000.

THE SELECTED ALTERNATIVE FOR CLEANUP OF THE SOURCE OF CONTAMINATION AT THE GULF SERVICE STATION, J & L FABRICATORS, THE CONNELL PROPERTY, AND THE ACMAR CHURCH OF GOD IS ALTERNATIVE SC-5, EXCAVATION, CENTRALLY LOCATED SOLIDIFICATION (WITH PLACEMENT IN THE PARKING LOT INSTEAD OF REPLACEMENT AT THE OTHER SUBSITES). VOLUME INCREASE AT THE PARKING LOT DUE TO PLACEMENT OF SOLIDIFIED MATERIAL FROM THE GULF STATION, J & L FABRICATORS, CONNELL PROPERTY AND THE ACMAR CHURCH OF GOD MAY BE OF CONCERN. THIS WOULD BE EXAMINED IN THE DESIGN PHASE OF THE CLEANUP, AND, IF THE PARKING LOT CANNOT ACCOMMODATE THE INCREASE IN VOLUME OF TREATED MATERIALS, MATERIALS FROM THE FOUR SUBSITES MAY BE PLACED BACK IN ITS ORIGINAL LOCATION OR POSSIBLY IN THE LEEDS LANDFILL. THIS WOULD BE DONE AFTER THE WASTE MATERIAL WAS SOLIDIFIED, STABILIZED, AND RENDERED NONHAZARDOUS. IF THE SOLIDIFIED WASTES CAN BE PLACED IN THE PARKING LOT, THE EXCAVATIONS FROM WHICH THE WASTE ORIGINATED WILL BE BACKFILLED WITH CLEAN SOIL AND REVEGETATED. SUBTITLE D CLOSURE, AND INSTITUTIONAL CONTROLS WOULD ONLY BE NECESSARY AT THE PARKING LOT LOCATION IN THIS CASE. THEY WOULD NOT BE NECESSARY AT THE CLEAN FILLED EXCAVATION LOCATIONS. THE ESTIMATED COST OF THIS SOURCE ALTERNATIVE FOR THE GULF STATION IS \$1,230,000, J&L FABRICATORS IS \$3,250,000, THE CONNELL PROPERTY IS \$2,710,000 AND THE ACMAR CHURCH OF GOD IS \$1,980,000. THE TOTAL ESTIMATED COST FOR THIS ALTERNATIVE IS \$9,170,000.

**TABLE 7**  
**COST ESTIMATES OF ALTERNATIVES**  
(\$ MILLION)

REMEDIAL ALTERNATIVES	PARKING LOT	GULF STATION	J&L FABRIC.	FLEMINGS PATIO	CONNELL PROPERTY	LEEDS LANDFILL	ACMAR CHURCH
SC-1 NO ACTION	0.033	0.010	0.015	0.026	0.013	0.008	0.005
SC-2 CAPPING	3.69	0.31	0.88	1.42	0.66	1.52	0.34
SC-3 RCRA LANDFILL	28.83	2.25	6.91	11.93	5.49	0.82	3.94
SC-4 ONSITE TREATMENT	12.78	1.26	2.94	4.70	2.55	0.68	1.88
SC-5 CENTRAL TREATMENT	12.78*	1.23	3.25	5.22	2.71	0.54	1.98
GROUNDWATER							
GC-1 NO ACTION	**	0.010	0.015	0.026	0.013	0.008	0.005
GC-2 NATURAL ATTENUATION	**	NA	0.015	0.026	0.013	0.008	NA
GC-3 CAP & SLURRY WALL	**	NA	1.50	3.43	1.26	2.96	NA
GC-4 PUMP & DISCHARGE TO ILCO	**	NA	2.59	4.96	3.25	8.91	NA
GC-5 PUMP,TREAT & DISCHARGE TO ILCO	**	NA	2.97	5.36	3.64	9.23	NA
GC-6 PUMP,TREAT & DISCHARGE TO OUTFALL	**	NA	0.61	0.64	0.61	0.77	NA

\* - ALTERNATIVE SC-4 (ONSITE TREATMENT) AND ALTERNATIVE SC-5  
(CENTRALLY TREATED AT THE PARKING LOT) ARE THE SAME FOR THE ILCO PARKING LOT.  
\*\* - GROUNDWATER CLEANUP AT THE ILCO PARKING LOT IS BEING ADDRESSED

UNDER RCRA AND A SUBSEQUENT ROD THAT WILL BE WRITTEN FOR OU #2.  
THEREFORE, NO EVALUATION OF ALTERNATIVES WAS DONE.

NA - BECAUSE NO LEAD OR OTHER CONTAMINANTS OF CONCERN WERE FOUND ABOVE  
THE GROUNDWATER REMEDIATION GOALS AT THE GULF STATION OR THE ACMAR  
CHURCH OF GOD, NO GROUNDWATER ALTERNATIVES WERE EVALUATED FOR THESE  
SUBSITES.

THE SELECTED ALTERNATIVE FOR CLEANUP OF THE SOURCE OF CONTAMINATION AT THE CITY OF LEEDS LANDFILL IS ALTERNATIVE SC-2, MULTILAYER CAP. THE ESTIMATED COST FOR THIS ALTERNATIVE FOR THE LEEDS LANDFILL IS \$1,520,000.

#### SELECTED GROUNDWATER ALTERNATIVES

A NO ACTION ALTERNATIVE (GC-1) IS THE SELECTED ALTERNATIVE AT THE GULF STATION AND THE ACMAR CHURCH OF GOD BECAUSE THERE IS NO GROUNDWATER CONTAMINATION AT THESE SUBSITES. ONLY GROUNDWATER MONITORING WILL BE REQUIRED. THE ESTIMATED COST OF THIS ALTERNATIVE FOR THE GULF STATION IS \$10,000 AND THE ESTIMATED COST FOR THE ACMAR CHURCH OF GOD IS \$5,000. THE TOTAL ESTIMATED COST FOR THIS ALTERNATIVE IS \$15,000.

THE SELECTED ALTERNATIVE FOR GROUNDWATER CLEANUP AT J & L FABRICATORS, FLEMING'S PATIO, AND THE CONNELL PROPERTY IS GC-2, NATURAL ATTENUATION ALTERNATIVE. THE ESTIMATED COST OF THIS ALTERNATIVE FOR J&L FABRICATORS IS \$15,000, FOR FLEMING'S PATIO IS \$26,000 AND FOR THE CONNELL PROPERTY IS \$13,000. THE TOTAL ESTIMATED COST FOR THIS ALTERNATIVE IS \$54,000.

THE SELECTED ALTERNATIVE FOR GROUNDWATER CLEANUP AND LONG-TERM CONTAINMENT UP TO THE LANDFILL BOUNDARY AT THE CITY OF LEEDS LANDFILL IS GC-6, EXTRACTION, AND CHEMICAL/PHYSICAL TREATMENT, AND DISCHARGE TO ONSITE SURFACE OUTFALL. THE ESTIMATED COST OF THIS ALTERNATIVE FOR LEEDS LANDFILL IS \$770,000.

#### COST ESTIMATES

THE ESTIMATED TOTAL COST OF SOURCE ALTERNATIVES IS \$28,170,000. THE ESTIMATED TOTAL COST OF GROUNDWATER ALTERNATIVES IS \$839,000. THE ESTIMATED TOTAL FOR THE ENTIRE SITE IS \$29,009,000. THIS COST INCLUDES TOTAL CAPITAL COST, TOTAL OPERATION AND MAINTENANCE (O&M) PRESENT WORTH COST AND OTHER CONSIDERATIONS OF EACH ALTERNATIVE SUCH AS TEMPORARY RELOCATION COSTS.

TREATABILITY STUDIES HAVE INDICATED THAT THE SELECTED TREATMENT METHODS WILL TREAT THE WASTE MATERIALS TO LEVELS BELOW LAND DISPOSAL RESTRICTION (LDR) LEVELS FOR LEAD. IF SOME OF THE WASTE MATERIAL OR GROUNDWATER TREATMENT SLUDGE CANNOT BE TREATED TO BELOW LDR LEVELS SUPERFUND WILL MEET TREATABILITY VARIANCE LEVELS FOR THE CONTAMINATED SOIL AND DEBRIS. THE TREATABILITY VARIANCE LEVEL FOR LEAD IS THE 99-99.9 PERCENT REDUCTION RANGE.

PLACEMENT IN THE LEEDS LANDFILL WILL MEET STATE RCRA SUBTITLE D REQUIREMENTS AND LAND DISPOSAL RESTRICTION LEVELS. PLACEMENT IN THE LEEDS LANDFILL WOULD ONLY BE DONE IF IT WAS PROTECTIVE AND MET ALL ARARS.

THE NATURAL ATTENUATION GROUNDWATER ALTERNATIVE IS SELECTED FOR J & L FABRICATORS, FLEMING'S PATIO AND THE CONNELL PROPERTY. LEAD WAS FOUND IN THE GROUNDWATER AT THESE SUBSITES AT LEVELS ABOVE THE CLEANUP LEVEL FOR LEAD IN GROUNDWATER. EPA HAS CONCLUDED THAT, BASED ON GROUNDWATER DATA AND GROUNDWATER MODELING THAT HAS BEEN CONDUCTED FOR THESE SUBSITES, THE LEAD CONCENTRATIONS IN THE GROUNDWATER WILL NATURALLY ATTENUATE OR LESSEN WITH TIME ONCE THE SOURCE IS REMOVED. MODELING HAS SHOWN THAT THE MOBILITY OF THE LEAD WILL BE REDUCED ONCE THE SOURCE IS REMOVED. A SOURCE REMOVAL ALTERNATIVE HAS ALSO BEEN SELECTED FOR ALL THREE OF THESE SUBSITES. LONGTERM GROUNDWATER MONITORING WILL BE CONDUCTED WITH THIS ALTERNATIVE.

FOR FLEMING'S PATIO THE PLUME SHOULD NO LONGER EXIST WHEN THE FILL AND THE CONTAMINATED WELL IN THE FILL ARE REMOVED AS PART OF THE SITE REMEDIATION. FOR J&L FABRICATORS MODELING INDICATES THE PLUME SHOULD BE TRANSPORTED BY GROUND-WATER TO THE DISCHARGE POINT IN NO LESS THAN 3.8 YEARS. AT THE CONNELL PROPERTY, MODELING INDICATES THAT NATURAL ATTENUATION WILL RESULT IN THE PLUME HAVING A CONCENTRATION BELOW THE GROUND-WATER CLEAN-UP GOAL IN LESS THAN FIVE YEARS.

IF, DURING THE GROUNDWATER MONITORING THE LEVEL OF LEAD DOES NOT DECREASE WITH TIME THEN THE ISSUE OF GROUNDWATER REMEDIATION AT THESE PARTICULAR SUBSITES WILL BE REEVALUATED. THERE WOULD ALSO BE A 5-YEAR REVIEW CONDUCTED 5 YEARS AFTER REMEDIAL ACTION IS IMPLEMENTED TO ASSESS WHETHER CLEANUP LEVELS WILL BE REACHED.

TEMPORARY RELOCATION WILL BE NECESSARY FOR THE CONNELL PROPERTY RESIDENTS AND FOR THE ACMAR CHURCH OF GOD CONGREGATION. IT WILL BE NECESSARY TO MOVE THESE PEOPLE BASED ON RISK AND THE FEASIBILITY OF THEM REMAINING WHILE THE REMEDIATION IS BEING CONDUCTED. IN BOTH CASES IT APPEARS THAT IT WOULD NOT BE FEASIBLE FOR THE RESIDENTS OR THE CHURCH CONGREGATION TO UTILIZE THEIR HOMES AND FACILITIES DURING PART OR ALL OF THE EXCAVATION. TEMPORARY RELOCATION COSTS ARE REFLECTED IN THE TOTAL COST.

IN SUMMARY, THE PREFERRED ALTERNATIVES ARE BELIEVED TO PROVIDE THE BEST BALANCE OF TRADE-OFFS AMONG ALTERNATIVES WITH RESPECT TO THE CRITERIA USED TO EVALUATE REMEDIES. BASED ON THE INFORMATION AVAILABLE AT THIS TIME, THEREFORE, EPA AND THE STATE OF ALABAMA BELIEVE THE SELECTED ALTERNATIVES WILL PROTECT HUMAN HEALTH AND THE ENVIRONMENT, WILL COMPLY WITH ARARS, WILL BE COST EFFECTIVE, AND WILL UTILIZE PERMANENT SOLUTIONS AND ALTERNATIVE TREATMENT TECHNOLOGIES OR RESOURCE RECOVERY TECHNOLOGIES TO THE MAXIMUM EXTENT PRACTICABLE. THE PREFERRED ALTERNATIVE SATISFIES THE PREFERENCE FOR TREATMENT AS A PRINCIPLE ELEMENT.

## **#SD**

### **STATUTORY DETERMINATIONS**

THE US EPA HAS DETERMINED THAT THIS REMEDY WILL SATISFY THE STATUTORY REQUIREMENTS OF SECTION 121 OF CERCLA BY PROVIDING PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT, ATTAINING ARARS, PROVIDING COST EFFECTIVENESS, AND UTILIZING PERMANENT SOLUTIONS AND ALTERNATIVE TREATMENT TECHNOLOGIES OR RESOURCE RECOVERY TECHNOLOGIES TO THE MAXIMUM EXTENT PRACTICABLE.

#### **PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT**

THE SELECTED REMEDIES PROVIDE PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT BY TREATING THE WASTE AND GROUNDWATER TO HEALTH BASED REMEDIATION GOALS. THE REMEDIES ALSO RELY ON LAND AND GROUNDWATER USE RESTRICTIONS TO PROHIBIT THE USAGE OF THE CONTAMINATED MEDIA UNTIL THE REMEDIATION GOALS ARE ACHIEVED.

#### **ATTAINMENT OF THE APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS (ARARS)**

REMEDIAL ACTIONS PERFORMED UNDER CERCLA, AS AMENDED BY SARA, MUST COMPLY WITH ALL APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS (ARARS) OR COMPLY WITH A JUSTIFIABLE WAIVER. THE SELECTED ALTERNATIVES WERE EVALUATED ON THE BASIS OF THE DEGREE THE ALTERNATIVES COMPLIED WITH THESE REQUIREMENTS. THE SELECTED ALTERNATIVES WERE FOUND TO ATTAIN ARARS.

WHEN ARARS ARE NOT AVAILABLE FOR SPECIFIC COMPOUNDS OR EXPOSURE MEDIA (SUCH AS GROUNDWATER), THE CLEANUP GOALS ARE BASED ON NON-PROMULGATED ADVISORIES OR GUIDANCE SUCH AS PROPOSED FEDERAL MCLGS, LIFETIME HEALTH ADVISORIES (HAS), AND REFERENCE DOSE (RFD) BASED GUIDELINES.

#### **FEDERAL LOCATION-SPECIFIC ARARS FOR THE ILCO SUBSITES INCLUDE THE FOLLOWING:**

RESOURCE CONSERVATION AND RECOVERY ACT (RCRA) LOCATION REQUIREMENTS - MANDATES THAT HAZARDOUS WASTE TREATMENT, STORAGE, OR DISPOSAL FACILITIES LOCATED WITHIN A 100-YEAR FLOODPLAIN MUST BE DESIGNED, CONSTRUCTED, OPERATED, AND MAINTAINED TO AVOID WASHOUT.

RESOURCE CONSERVATION AND RECOVERY ACT (RCRA) CLOSURE UNDER SUBTITLE D - REQUIREMENTS FOR CLOSURE OF MUNICIPAL LANDFILLS IS USED TO CLOSE SOLID WASTE AREAS AT THE ILCO SUBSITES.



ENDANGERED SPECIES ACT - THE SELECTED REMEDY IS PROTECTIVE OF SPECIES LISTED AS ENDANGERED OR THREATENED UNDER THE ENDANGERED SPECIES ACT. REQUIREMENTS OF THE INTERAGENCY SECTION 7 CONSULTATION PROCESS, 50 CFR PART 402, WILL BE MET. THE DEPARTMENT OF INTERIOR, FISH AND WILDLIFE SERVICE, WILL BE CONSULTED DURING REMEDIAL DESIGN TO ASSURE THAT ENDANGERED OR THREATENED SPECIES ARE NOT ADVERSELY IMPACTED BY IMPLEMENTATION OF THIS REMEDY.

FISH AND WILDLIFE COORDINATION ACT - REQUIRES ADEQUATE PROTECTION OF FISH AND WILDLIFE IF ANY STREAM OR OTHER BODY OF WATER IS MODIFIED. ADDITIONALLY, ACTIONS IN WETLANDS ARE REQUIRED TO AVOID ADVERSE EFFECTS, MINIMIZE POTENTIAL HARM, AND RESTORE AND PRESERVE NATURAL AND BENEFICIAL VALUES.

FEDERAL REGULATIONS THAT CONTAIN POTENTIAL ACTION-SPECIFIC ARARS FOR THE SITE ARE LISTED BELOW:

RCRA COMPLIANCE MONITORING PROGRAM 40 CFR SECTION 264.99 - ESTABLISHES CRITERIA FOR MONITORING GROUNDWATER QUALITY WHEN CONTAMINANTS HAVE BEEN DETECTED.

FEDERAL AMBIENT WATER QUALITY CRITERIA (AWQC) FROM QUALITY CRITERIA FOR WATER 1986 (GOLD BOOK) - IS THE MAXIMUM CONCENTRATION FOR THE PROTECTION OF AQUATIC LIFE. THE AWQC MAY NOT BE INITIALLY MET. HOWEVER, THESE STANDARD WILL BE ACHIEVED OVER A SHORT PERIOD OF TIME BECAUSE THE SOURCE OF CONTAMINATION WILL BE REMOVED OR CAPPED.

RCRA LAND DISPOSAL RESTRICTIONS (LDRS) 40 CFR 268 - ESTABLISHED RESTRICTIONS ON THE PLACEMENT OF RCRA HAZARDOUS WASTES. THE LDRS ARE APPLICABLE ONLY IF THE CONTAMINATED SOIL IS EXCAVATED AND REMOVED FROM SITE, OR EXCAVATED AND TREATED, AND THEN REPLACED IN A WAY THAT CONSTITUTES PLACEMENT.

STANDARDS APPLICABLE TO TRANSPORTERS OF HAZARDOUS WASTE 40 CFR 263 - ESTABLISHED STANDARDS FOR TRANSPORTING HAZARDOUS WASTE IF THE TRANSPORTATION REQUIRES A MANIFEST UNDER 40 CFR PART 262. THESE STANDARDS ARE APPLICABLE WHEN TRANSPORTING WASTE FROM ONE SUBSITE TO ANOTHER PRIOR TO TREATMENT.

FEDERAL OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION ACT (OSHA) - THE SELECTED REMEDIAL ACTION CONTRACTOR WILL DEVELOP AND IMPLEMENT A HEALTH AND SAFETY PROGRAM FOR ITS WORKERS. ALL ONSITE WORKERS WILL MEET THE MINIMUM TRAINING AND MEDICAL MONITORING REQUIREMENTS OUTLINED IN 29 CFR 1910.

#### COST EFFECTIVENESS

THE TOTAL PRESENT WORTH COST OF EPA'S SELECTED REMEDIES ARE \$29,009,000. COST EFFECTIVENESS IS DETERMINED BY COMPARING THE COSTS OF ALL ALTERNATIVES BEING CONSIDERED WITH THEIR OVERALL EFFECTIVENESS TO DETERMINE WHETHER THE COSTS ARE PROPORTIONAL TO THE EFFECTIVENESS THAN OTHER, LESS COSTLY COMBINATIONS OF REMEDIES. EPA HAS DETERMINED THE COST OF THE SELECTED ALTERNATIVES ARE PROPORTIONATE TO THE OVERALL EFFECTIVENESS. THEREFORE, THE COMBINED REMEDY IS CONSIDERED COST EFFECTIVE.

#### UTILIZATION OF PERMANENT SOLUTIONS AND ALTERNATIVE TREATMENT TECHNOLOGIES TO THE MAXIMUM EXTENT PRACTICABLE

EPA HAS DETERMINED THAT THE SELECTED COMBINATION OF REMEDIES PROVIDES THE BEST BALANCE AMONG THE NINE EVALUATION CRITERIA FOR THE ALTERNATIVES EVALUATED. THE SELECTED COMBINATION PROVIDES PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT, REDUCES THE MOBILITY OF THE CONTAMINANTS, AND IS COST EFFECTIVE. THE REMEDY, WHEN COMPLETE, WILL PROVIDE A HIGH DEGREE OF PERMANENCE. THE REMEDY REPRESENTS THE MAXIMUM EXTENT TO WHICH PERMANENT SOLUTIONS AND TREATMENT CAN BE PRACTICABLY UTILIZED TO REMEDIATE THE ILCO SITE.

PREFERENCE FOR TREATMENT AS A PRINCIPAL ELEMENT

THE STATUTORY PREFERENCE FOR TREATMENT WILL BE MET BY THE SELECTED COMBINATION OF REMEDIES. THE COMBINATION RELIES ON SOLIDIFICATION/STABILIZATION OF CONTAMINATED SOIL TO PERMANENTLY IMMOBILIZE THE MATERIAL. THE SURFICIAL AQUIFER CONTAMINATED WITH LEAD AS WELL AS OTHER INORGANIC COMPOUNDS WILL ATTAIN GROUNDWATER REMEDIATION GOALS THROUGH PASSIVE TREATMENT AND BY REMOVAL AND TREATMENT OF THE SOURCE.

**#DSC**

**DOCUMENTATION OF SIGNIFICANT CHANGES**

EPA ISSUED A PROPOSED PLAN (PREFERRED ALTERNATIVE) FOR REMEDIATION OF THE ILCO SUPERFUND SITE ON JULY 25, 1991. THE SELECTED COMBINATION OF REMEDIES DOES NOT DIFFER FROM THE PROPOSED PLAN. EPA REVIEWED ALL WRITTEN AND VERBAL COMMENTS SUBMITTED DURING THE PUBLIC COMMENT PERIOD. UPON REVIEW OF THESE COMMENTS, IT WAS DETERMINED THAT CORRECTIONS IN THE RI/FS DOCUMENTS NEEDED TO BE MADE AND AN ADJUSTMENT NEEDED TO BE MADE IN THE COST ESTIMATES THAT WERE IN THE PROPOSED PLAN.

THE RI AND FS DOCUMENTS STATE THAT THE NAAQS LEAD LEVEL IS 15 UG/M3. THE CORRECT NAAQS LEVEL IS 1.5 UG/M3. ALSO, IN THE RI AND FS IT STATES THAT AIR LEVELS EXCEEDED THE NAAQS LEVEL FOR LEAD. LEAD WAS DETECTED AT SOME OF THE SUBSITES BUT NO SAMPLES WERE FOUND ABOVE THE NAAQS LEVEL. THESE CORRECTIONS HAVE BEEN MADE BY ADDING MEMOS TO THE DOCUMENTS THAT SERVE AS ERRATA SHEETS.

THE COST ESTIMATES FOR J&L FABRICATORS FOUND IN THE PROPOSED PLAN INCLUDE THE COST OF REMEDIATING THE SEDIMENTS IN DRY CREEK. SEDIMENT REMOVAL IS NOT NECESSARY THERE. CHANGES IN THE COST ESTIMATES WERE MADE IN THE FS DURING THE PUBLIC COMMENT PERIOD BEFORE THE PUBLIC MEETING. THIS CHANGED THE TOTAL ESTIMATED COST FROM \$19,139,000 TO \$18,872,000.

A COMPUTER ERROR WAS FOUND IN THE FEASIBILITY STUDY IN THE COST ESTIMATE FOR ALTERNATIVE SC-4 FOR THE PARKING LOT. THE COST WAS ORIGINALLY STATED AS \$2,660,000 AND THE CORRECTED COST IS \$12,780,000. THIS CHANGES THE TOTAL FROM \$18,872,000 TO \$29,009,000.